Rock Products

DEVOTED TO THE PRODUCTION OF ROCK AND ITS PRODUCTS

Vol. VI. No. 10. LOUISVILLE, KY., APRIL 22, 1907. MANUFACTURED PRODUCTS AND CONCRETE EDITION

CAROLINA PORTLAND CEMENT COMPANY

We are the largest distributers of Portland Cement, Lime Plaster, Fire-brick and General Building Material in the Southern States and have stocks of Standard Brands at all of the Atlantic and Gulf Seaports, and at our interior mills and warehouses, for prompt and economical distribution to all Southern territory. Write for our delivered prices anywhere. Also Southern agents for the "Dehydratine's" waterproofing material. "Universal," "Acme" and "Electroid" Brands Ready Roofing. Get our prices.

Charleston, S. C. Birmingham, Ala. Atlanta, Ga. New Orleans, La.

Vulcan Steam Shovels

are loading **Blasted Rock**, in some of the largest quarries in the U. S., for **less than 4 cents per ton.** Don't this interest you? Let us show you how they do it. Write us today for information.

The Vulcan Iron Works Company, 129 Vulcan Place, TOLEDO, OHIO.

UNION MINING COMPANY,

Manufacturers of the Celebrated

MOUNT SAVAGE FIRE BRICK

GOVERNMENT STANDARD.

DEVOTE a special department to the manufacture of Brick particularly adapted both physically and chemically to

Lime Kiln and Cement Kiln Construction

Large stock carried. Prompt shipments made. Write for quotations on Standard and Special shapes, to

UNION MINING CO.,
Mount Savage, Md.

CAPACITY, 60,000 PER DAY.
ESTABLISHED, 1841.

Northwestern Clay Mfg. Co.
New Windsor, Illinois.

J. O. FREEMAN, Genl. Mgr.

Sewer Pipe

An inquiry will be answered.

Drain Tile. Works: Griffin, Ill.

Ottawa Silica Co.'s Washed White Flint Sand

Is used for sawing stone in more than a dozen states. Cuts more and lasts longer than any other sand on the market. Unexcelled for Roofing, Facing Cement Blocks, White Plaster, etc. Freight rates and prices on application.

OTTAWA SILICA CO., . - Ottawa, Ill

DEXTER Portland Cement
THE NEW STANDARD
Sole Agents SAMUEL H. FRENCH & CO. Philadelphia

Phoenix Portland Cement UNEXCELLED FOR ALL USES.
Manufactured by
PHOENIX CEMENT CO.
NAZARETH, PA.
Sole Selling Agent WM. G. HARTRANFT CEMENT CO.,
Real Estate Trust Building PHILADELPHIA, PENNSYLVANIA

"RELIANCE" BELT ABSOLUTELY BEST
FOR GRIFFEN MILLS
FOR TUBE MILLS
FOR BALL MILLS

Chicago Belting Company
MAKERS

67-69 South Canal Street, SEND US YOUR SPECIFICATIONS. CHICAGO, ILL.

ALMA Portland Cement

STANDARD BRAND OF MIDDLE WEST.

Specially Adapted to all Reinforced Concrete and High-Class Work.

Alma Cement Co.,
WELLSTON, OHIO

Binns Stucco Retarder Co.
UHRICHSVILLE, OHIO
The largest manufacturer of retarder in the world.
Write us for prices.

BAGS FOR LIME AND CEMENT

We have recently purchased the factory of the Toledo Paper Bag Co. and have tripled the capacity, and are now in position to make prompt shipment of all orders with the best quality of paper.
Prices quoted and samples mailed on receipt of inquiry.

The Urschel-Bates Valve Bag Co. Toledo, Ohio

Improved Shield Cement

The Best Natural Cement
With 3 parts sand—425 lbs. 1 year.
Economical for Concrete.

LAWRENCE CEMENT CO. OF PENNA.

SIEGFRIED, PA. PAMPHLET FREE.

SEND FOR BOOKLET — MARQUETTE PORTLAND CEMENT — THE SIDE WALK BRAND

MARQUETTE PORTLAND CEMENT
Gives Absolute Satisfaction for All Kinds of Concrete Work.
MARQUETTE CEMENT MANUFACTURING CO.,
MILLS: LA SALLE, ILL. SALES DEPARTMENT: MARQUETTE BLDG., CHICAGO.

The Universal Portland Cement Co.

ANNOUNCE the removal of their general offices, on May 1st, to the 14th floor, Commercial National Bank Building, Chicago, Illinois. Also the establishment of Pittsburg offices in the Frick Building, Pittsburg, Pa.

Buckeye Portland Cement Co.

ESTABLISHED 1888.

Manufacturers of the celebrated "Buckeye" brand of

Portland Cement

"Buckeye" has stood the wear and tear in many important places for the past fifteen years and under the new process of manufacture is now better than ever.

WE INVITE YOUR CORRESPONDENCE.

Bellefontaine, Ohio.

Treatise on Water-Proof Concrete and Portland Cement Lime Mortars.

A new pamphlet just issued containing important tensile and permeability tests.

MAILED ON REQUEST.

CHARLES WARNER COMPANY

Land Title Building, Philadelphia, Pa. Wilmington, Del.

ONE GRADE—ONE BRAND.

The Recognized Standard American Brand.

General Offices: EASTON, PA.

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541 Wood, PITTSBURGH. Builders Exchange, BUFFALO.
Builders Exchange, BALTIMORE. Board of Trade Bldg., BOSTON.
Marquette Building, CHICAGO. Park Row Bldg., NEW YORK.
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"LEHIGH" PORTLAND CEMENT

High Tensile Strength, Finely Ground, Light and Uniform in Color.

MANUFACTURED BY THE

Lehigh Portland Cement Co.

ALLENTOWN, PA

Western Office:
Commercial Bank Building,
CLEVELAND, OHIO.

Write for Catalogue.

Capacity, 8,000,000 Yearly.

Chicago Portland Cement Co.

MANUFACTURER OF . . .

"CHICAGO AA" PORTLAND CEMENT.

We make one brand only. The best that can be made.

ST. LOUIS PORTLAND CEMENT COMPANY. RED RING ST. LOUIS. BRAND

Manufacturers: Sales Office, Holland Building, St. Louis.

HYDRATED PORTLAND LIME

IS IDEAL FOR

Waterproofing Concrete Blocks

SAVES MONEY. TRY IT.

—FOR INFORMATION AND PRICES, WRITE—

CHICKAMAUGA CEMENT CO.,

Sole Manufacturers. CHATTANOOGA, TENNESSEE

Rock Products

DEVOTED TO THE PRODUCTION OF ROCK AND ITS PRODUCTS

Vol. VI. No. 10. LOUISVILLE, KY., APRIL 22, 1907. MANUFACTURED PRODUCTS AND CONCRETE EDITION

CONCRETE CONSTRUCTION IN NEW ORLEANS.

NEW Orleans has been slow in taking up concrete but within the last twelve months the growth in the popularity of this form of construction in the Crescent City has been remarkable. At first the use of concrete was confined to foundations and piling but more recently buildings of the monolith type of construction have been erected. The use of concrete in residences has also largely increased and foundations, porches, sidewalks, terraces and the like are of this type of construction.

Since the early settlement of the city, which is located on a marsh, the foundations of all buildings have been built on wood piling. Cypress was the preferable wood for many years but later the tall straight yellow pine has been used extensively. At that time the sewerage was all above ground and the earth was water-soaked. Now miles and miles of underground sewers have been built and the districts where such drainage is in use are much drier than formerly and therefore not suitable for driving wood piling. The use of concrete piling has come to fill the need and wood is being displaced rapidly.

There is one name connected with the concrete industry in New Orleans that stands out alone. A year ago A. J. Biggs came to New Orleans. He had made a study of concrete in the Boston School of Technology and had applied his knowledge in other places. Shortly after coming to New Orleans he was appointed engineer of the construction of the Gulf Bag Co. new building, which is five stories high and has an area of 110 by 220 feet. This building is of reinforced concrete from the piling to the roof. The foundation is supported by 623 concrete piles. Another building which shows the engineering ability of Mr. Biggs, who is now a member of the firm of MacKenzie, Goldstein and Biggs, architects, is the flouring mill of H. T. Lawler & Sons, which has recently been completed. This is said to be the only flouring mill in the United States built of reinforced concrete and one of the two all-concrete buildings in the South. It is located at Louise and North Peters streets and has 235 concrete piles on which the foundation rests. All the beams are reinforced with coiled bars, the floor slabs have expanded metal combined with plain bars, the piers and columns are reinforced with plain rods and hooped with expanded metal. All door openings have the automatic sliding fire doors. The building is six stories in height.

Another building in which reinforced concrete has been used to advantage is the Third District Bank, a one-story structure of classic design, which shows the adaptability of concrete to any kind of construction.

A monster piece of concrete work is going on at the mouth of the Mississippi river. Thousands of dollars have been spent upon the jetties, trying to deepen the channel and keep it deep enough for ocean vessels of any draft to enter without fear of the bar. The government engineers think they have at last solved the problem. Concrete walls are being built that at high tide will restrain or hold the waters in the channel, not allowing them to spread out. The water thus confined sweeps out the channel deeper and deeper until it is expected that in two or three years' time the channel will be 35 feet deep.

The process of building these walls is interesting. The wall on one side of the river will be approximately three miles long and on the other side five miles long. Christie & Lowe, of New Orleans, are the contractors. Their office is on the fourth floor of the Morris building. The first thing they did was to send down a large force and have rows of small but comfortable houses built for their workmen. Down there they employ all white labor and strange to say have no difficulty in getting all the men they want to carry on the work. Another force of men were put to work up the Mississippi river cutting willows and yet another force over in Alabama getting out stone. The willows are brought down in barges and the stone is shipped by rail to Harrihan, where it is unloaded into barges and towed by Christie & Lowe tugs to the place it is to be used. Immense mats are made of the willows and on top of these is a layer of stone a foot thick. On this the concrete walls are built.

Under the specifications no concrete shall be laid on mattresses that have not been in place one year. The purpose of this provision is to allow the mats to settle, so they can bear the weight of the concrete without shifting. For that reason the work of laying the concrete is done in sections. Early in November it began on the east jetty, and 6,500 feet were completed. Then the scene of activity was transferred to the west jetty, where it is now proceeding rapidly. The last of this work should be completed by November of this year.

The building of this concrete wall or corping is an interesting process. The summit of the jetty is thirty-five feet in width, covered with loose stone or riprap, as it is called. The concrete is mixed just beside the jetty. An immense mixer has been rigged up on a barge, which is anchored just off the spot where the work is in progress. If in deep water, the mixer lies against the jetty, and the concrete is poured into the moulds or boxes through a chute. If in shallow water, a derrick intervenes, and hoists the concrete from the mixer to the jetty.

The mixer is a novel arrangement. There is a high platform, which is divided off into three spaces. In one is piled gravel, in another sand and in a third cement. In the floor are three chutes leading to the mixer at the bottom. These chutes are built so that when filled each will hold a certain amount of material. They are emptied into the mixer, having the proper proportions of materials, and the ponderous mixer, driven by an engine, proceeds to revolve and thoroughly mix them. Attached to the mixer is a water barrel for the purpose of measuring the quantity of water used with each lot. In this way the exact proportions of all ingredients are automatically assured, and this further assures the same kind of concrete in every part of the work, in accordance with the specifications. As a precaution against cracking, caused by settling, the blocks are made in alternate twelve-foot sections, weighing about forty tons each, and then the intervening spaces are filled in. The Government has an inspector on the mixer, and another watches the puddling process. The concrete wall is four and a half feet

(*Continued on page 49.*)

THIRD DISTRICT SAVINGS BANK & TRUST CO. BUILDING NEW ORLEANS, LA. REINFORCED CONCRETE CONSTRUCTION, MACKENZIE, GOLDSTEIN & BIGGS, ARCHITECTS.

Strength Durability Permanence

Not only laboratory tests, but results in actual work prove the high grade quality of

Northampton Portland Cement

Especially adapted for Cement Blocks, Sidewalks, and all forms of concrete and re-inforced concrete construction.

Northampton Portland Cement Co.

No. 1 Madison Ave., NEW YORK.

Works at Stockertown, Pa.

Use Louisville Hydraulic Cement for Foundations

and invest the amount saved thereby otherwise. Concrete made of Louisville Cement is strong enough for foundations of all kinds, and by the use of it a great saving is effected. The following letter from a well-known firm of Chicago architects, written when Louisville Cement was not ground so fine as it is to-day, shows its good quality and suitability for foundations:

CHICAGO, ILL., Sept 29, 1898.

Mr A. L Kanagy, care of Western Cement Co., Louisville.

Dear Sir: In reply to your question concerning the concrete foundations of power house of the South Side Elevated Ry. Co., at 40th and State Sts., Chicago, which foundations were made of Louisville Cement, we beg to say that the foundations have turned out to be perfectly satisfactory, and behaved all the time as we expected they would.

The controversy which arose at one time concerning this was caused by no fault of the concrete or of the cement.

It is true that one of the engines was wrecked and twisted off the foundation bolts without doing any injury to the foundation.

Yours very truly, D. H. BURNHAM & Co.

Louisville Cement mortar made in the proportion of 1 cement to 2 sand, will develop a tensile strength of over 100 pounds per inch in seven days, and will withstand a crushing strength of over 1,000 pounds per inch in twenty-eight days.

Louisville Cement in bags of 4.77 cubic feet per barrel, costs less than 50c per barrel at the mills. At this price a simple calculation will show the economy of its use.

Write for pamphlets and test sheets.

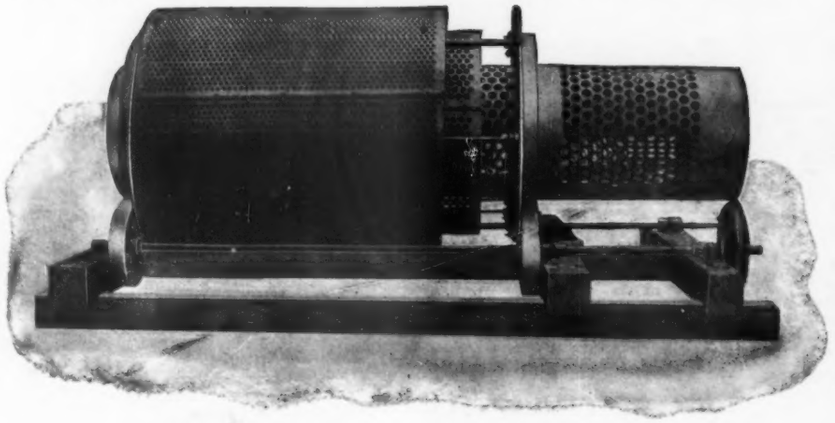
WESTERN CEMENT CO.

INCORPORATED.

281 West Main Street, Louisville, Kentucky

The O'Laughlin Revolving Screen

For Granite, Stone, Sand, Gravel, Coal, Coke or anything requiring separation.



THE principle of separating is exactly opposite that of the older style revolving screen, the materials being discharged on coarse perforations first. The coarse material is immediately separated from the finer in each of the concentric screens to the different required sizes.

The type of screen here illustrated is in use at a No. 8 Crushing plant for limestone (which was formerly equipped with three of the older style screens and required an outlay of $350.00 for each 100,000 cu. yds. of stone separated. Up to the present time it has made perfect separation into five sizes of 300,000 cu. yds. with a recent outlay of $27.00 for renewing the portion of the screen that the stone has been discharged on, and should do as much more without any additional outlay.

The inside or longest screen is 8 feet long and 36 inches in diameter, the next concentric screen is 7 feet 6 inches long and 48 inches in diameter, the next screen is 7 feet long and 58 inches in diameter, the next is 6 feet 6 inches long and 66 inches in diameter. With the exception of the inner screen each section is adjustable and the screen is complete without it. The figures given above give 492 sq. ft. of screen surface which is equal to 3 screens of the old pattern, 14 feet long and 36 inches in diameter.

We claim it requires but one-fifth the power to operate our screen than the old style and yet it does the same amount of work. This is proven first, by the length of screen; second, by the size of driving pinion in comparison with gear; third, by the size of trunnions in comparison to the tread of screen. The material to be separated and weight of screen rests above the bearing points. While in the old style screen it is below the center of bearing points. The material being immediately separated by dropping into each of the concentric screens reducing the wear on screens to the minimum.

Let us know your requirements, what materials you wish separated, the amount daily and the different sizes, and we will furnish an estimate as to cost, power required, etc.

JOHN O'LAUGHLIN, - - - RACINE, WIS.

Reputation Unrivalled

ONE BRAND ONLY
Sound, Strong, Uniform

TRADE MARK
VULCANITE PORTLAND CEMENT
MANUFACTURED BY VULCANITE PORTLAND CEMENT CO. NEW YORK & PHILADELPHIA
REG. U.S. PAT. OFFICE

ONE OF THE OLDEST AND THE BEST.

Vulcanite Portland Cement Co.

Flatiron Bldg., New York. Land Title Bldg., Philadelphia.

Newaygo Portland Cement Co.

Sales Office: Michigan Trust Building,
GRAND RAPIDS, MICH.

Write us for prices. Send us your orders

Improved Utica Hydraulic Cement

The finest ground and highest grade Natural Cement manufactured in the U. S. Every car tested by Robt. W. Hunt & Co., and their test furnished on every car shipped.

MEACHAM & WRIGHT CO. Sole Agents, Chicago.

BANNER CEMENT CO.,

MAKERS OF THE FAMOUS BANNER BRAND OF
LOUISVILLE CEMENT.

Guaranteed that 90 per cent. will pass a ten thousand Mesh Sieve.

WE SELL TO DEALERS ONLY.

GENERAL OFFICE: MASONIC TEMPLE, CHICAGO, ILL.

Quality Stone Produces Profit

The use of White Portland Cement with **marble dust**, crushed light colored stone or white sand will give you a concrete of **exceptional beauty** and strength. If you want to **put quality** into your work **and make it stand up under the most careful investigation and surpass all others in beauty of appearance** you should use **White Portland Cement.** Guaranteed to equal any high grade Portland Cement in strength and durability, and pass every test specification for Portland Cement. Unexcelled for all kinds of ornamental work, porch columns, sills and coping, monuments, floors and steps, for facing for concrete blocks, bridges, reinforced or other monolithic work. **Price, $1.25 per bag of 100 lbs. Marble Dust, $1.60 per bbl. of 400 lbs.**

J. E. BARTLETT COMPANY, - - Jackson, Mich.

EDISON
Portland Cement Co.

TRADE Thomas A. Edison MARK
EDISON
PORTLAND
CEMENT
COMPANY
NEW VILLAGE, N.J.

85 per cent. thru 200
98 per cent. thru 100

The Finest Ground Portland Cement Manufactured

"Neat tests are of less value than those of the briquettes made with sand and cement. **The fineness of the cement is important, for the finer it is the more sand can be used with it.**"
[Abstract from "Specifications for Portland Cement," issued by the United States Navy Department, June 12, 1905.]

FINE GRINDING
OF
PORTLAND CEMENT
AND WHAT IT MEANS

For a proper understanding and full appreciation of the importance of fine grinding, it is necessary to explain that Portland Cement (as manufactured in the Lehigh Valley) is made from what is commonly understood as "Cement Rock," with the addition of sufficient limestone to give the necessary amount of lime. The rock is broken down and then ground to a fineness of 80 per cent to 90 per cent through a 200 mesh screen. This ground material passes through kilns and comes out in clinker. This is ground and **that part of this finely ground clinker that will pass a 200 mesh screen is cement;** the residue is still clinker. These coarse particles or clinkers will absorb water very slowly, are practically inert, and have very feeble cementing properties. **The residue on a 100 mesh screen is useless.**

Edison Portland Cement is ground 85 per cent through a 200 mesh screen,—10 per cent finer than other brands. This can be verified in any laboratory.

In a barrel of Edison Portland Cement, therefore, you get 85 per cent of Portland Cement and 15 per cent of clinker. In a barrel of other brands you get 75 per cent of cement and 25 per cent of clinker.

If you are buying a ton of coal, would you buy the coal containing 25 per cent of slate, or would you prefer the coal containing but 15 per cent of slate?

If, instead, you are buying iron ore, would you not give preference to ore that contained 10 per cent more units of iron?

Another point is worth considering and that is that the Edison Portland Cement Company make but one brand or quality, and that is the best.

SALES OFFICES:

Real Estate Trust Bldg., Philadelphia.
Machesney Bldg., Pittsburgh.
St. James Bldg., New York.
Union Bldg., Newark, N. J.

Tell 'em you saw it in ROCK PRODUCTS.

Pennsylvania Portland

UNEQUALLED FOR HIGH CLASS CONCRETE WORK

Pennsylvania Cement Co.

26 CORTLANDT ST., NEW YORK

IT IS BETTER

to be master of one trade than Jack of all trades. We are masters in the manufacture of Nuttall cut or planed gears, we do nothing else.

R. D. Nuttall Co.,
Pittsburg, Pa.

CHARLES W. GOETZ LIME & CEMENT CO.

MANUFACTURERS OF AND DEALERS IN

Glenwood Lime, Banner Brand Louisville Cement, Portland Cements and Building Materials.

St. Louis, Mo.

Now is the Time!

To dispose of machinery not in use. Why not try a few lines in the Wanted and For Sale Department?

? THE IMPORTANT QUESTION

A RELIABLE PAPER BAG

THAT will stand severe handling, and arrive at destination without damaged contents, has been the one desire of the cement and hydrated lime manufacturer. We have solved the problem and can convince you with the first order.

The **West Jersey Paper Mfg. Co.**

Front and Elm Streets CAMDEN, N. J.

AUTOMATIC ELEVATORS

The greatest invention of the day, will load sand and gravel both run of bank or screened for less money per yard than any device on the market.

For descriptive catalogue address,

SHOEMAKER & CASPARIS,

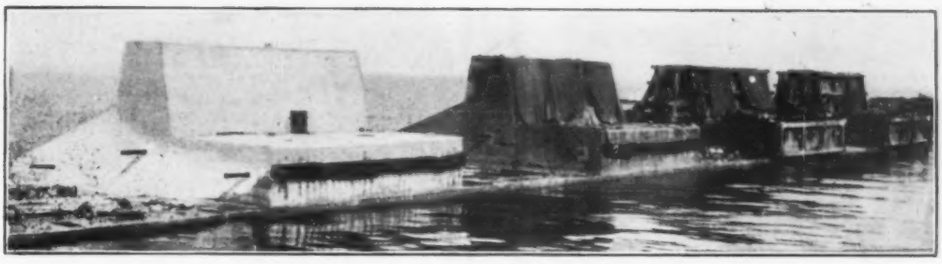
R. L. SHOEMAKER, MGR.,

NEWCOMERSTOWN, OHIO.

Tell 'em you saw it in ROCK PRODUCTS

UNCLE SAM'S O. K.

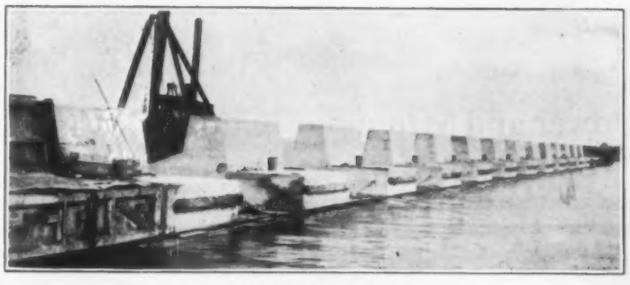
Government Knows a Good Thing and is Using ALPENA PORTLAND CEMENT in the Work Shown in Following Cuts



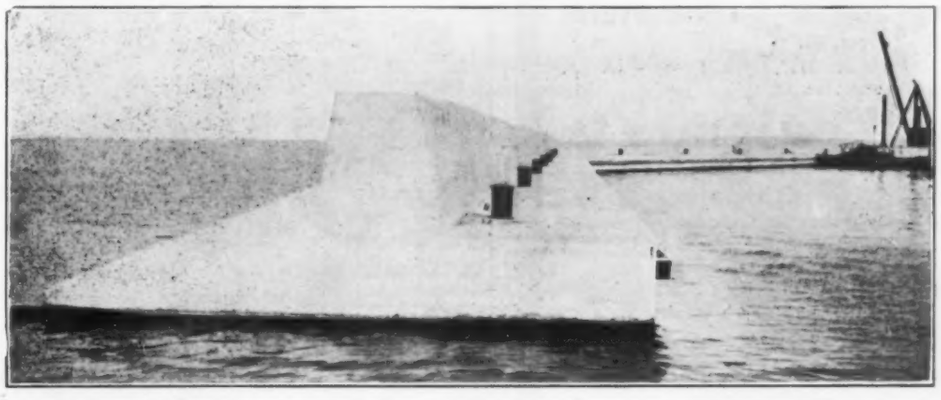
MONOLITHS, WET AND DRY.

CONCRETE BREAKWATER AT HARBOR BEACH.

One of the most notable examples of concrete construction now under way in the United States, both from its commercial importance and its size and strength, is the new concrete breakwater, or artificial harbor, begun in 1904 and now in course of construction at Harbor Beach, Michigan, to replace the old timber structure. Situated as it is, sixty miles from Port Huron, and exposed naturally to the full force of Lake Huron gales, this artificial harbor is one of the most important and most extentsively used of the storm refuges of the Great Lakes. The Alpena Portland Cement Co. furnished the cement for its construction.



ONE SECTION PARTLY COMPLETED.



ONE SECTION COMPLETED.

Alpena Portland, a Pure Rock Cement

Don't Forget the Brand. Get ALPENA. None Better

Alpena Portland Cement Co.

ALPENA, MICHIGAN

McCully Gyratory Crushers — You See Them Everywhere

LARGEST CAPACITY

RUNNING COOL

TOP SUSPENSION OF SHAFT

NO SHUTDOWNS FOR REPAIRS

REQUIRE LEAST POWER

STEEL GEARS

BOTTOM DROP

PERFECT OILING DEVICES

(Write for Catalog No. 4.)

Power and Mining Machinery Co. — Cudahy, Wis. (SUBURB OF MILWAUKEE)

Economy Dictates

that the jaw-plates, cheek-plates, cones and concaves of your crushers should be made of

"Taylor-Made" MANGANESE STEEL "Taylor-Made"

The actual ratio of wear in "Taylor-Made" plates, as compared with other castings, has been proved by large users in hundreds of cases to warrant their use.

"THE REASON'S IN THE STEEL."

We shall be pleased to give you further information.

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COMPLETE INDUSTRIAL

Railway Equipments

For the Clay Worker, Brickmaker, Cement Worker, Mines and Quarries.

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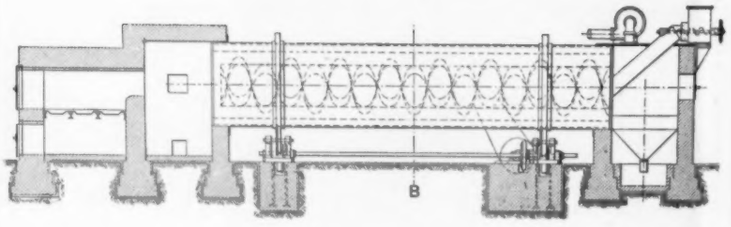
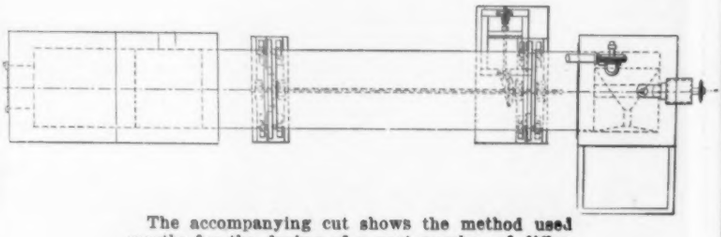
Chronicle Building, San Francisco.

DRYERS FOR ALL MATERIALS





The accompanying cut shows the method used mostly for the drying of a vast number of different materials, yet in many cases will be objectionable. We therefore build dryers to meet the requirements.

We shall be pleased to estimate the cost of any dryer upon receipt of full information as to requirements and facilities for operating, accompanied by a sample of the material to be dried.

J. R. ALSING CO., Engineers and Manufacturers

MAIN OFFICE: 136 Liberty Street, NEW YORK

LION FUZES
AND
BLASTING MACHINES
ARE THE BEST

No. 1, Capacity, 8 Holes
No. 3, Capacity, 25 Holes
No. 4, Capacity, 50 Holes

If you do not fire your blasts by electricity, you should send for the booklet

"FIRING BLASTS BY ELECTRICITY"

Which tells all about this method. If you are already using fuzes, you should have the book anyhow, as it contains many valuable hints. Sent free.

The AETNA POWDER COMPANY
143 Dearborn Street, CHICAGO

ROCK DRILLS

THE "SERGEANT" (Independent Valve)
THE "LITTLE GIANT" (Tappet Valve)

The World's Standard of Rock Drill Excellence.

POWER ECONOMY—The valve movement of Ingersoll-Rand drills gives the quickest admission, the freest exhaust and the least wear and leakage, meaning higher speed, a harder blow and a greater depth of hole drilled per cubic foot of air used than any other drill.

REPAIR ECONOMY—The use of selected metals, the oil-treating of steel parts and the applied experience of thirty-seven years of drill building give Ingersoll-Rand drills an unequaled endurance and a repair economy unapproached by any other drill.

INGERSOLL-RAND CO.
11 Broadway, NEW YORK.

One of 75 Ingersoll-Rand Drills at work on the Panama Canal. Nine Ingersoll-Rand Air Compressors are also used on this work.

Chicago, Cleveland, Birmingham, Philadelphia, Houghton, Mich., Los Angeles, El Paso, Boston, Denver, St. Louis, Seattle, Montreal, Pittsburg, San Francisco, Vancouver, Butte, Salt Lake, Toronto

P-22

HIGH GRADE
FIRE BRICK
For Cement Works, Lime Kilns, Cupolas, Steel and Iron Works of every description

Louisville Fire Brick Works, K. B. GRAHN, Prop., Highland Park, Ky. P.O.

HENRY S. SPACKMAN ENGINEERING CO.
Official Chemists, National Association of Manufacturers of Sand Lime Brick.
HENRY S. SPACKMAN, Pres. Dr. E. W. LAZELL, Vice Pres.
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Lime and Sand-Lime-Brick plants designed, constructed and superintended. Established plants examined and improved. Properties investigated and Physical and Chemical reports made. Chemical and Physical reports of all building material a specialty.

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Take Time by the Forelock

Get a Kritzer Continuous Hydrator

If you want to do a rousing lime business in the spring, you've got to begin to get ready for it NOW. Get your plant up and get busy hydrating. Let the people know you mean business, and that you've got the stuff to sell. Spread the news all about you everywhere. Let the builders and everybody who uses lime know how much better hydrated lime is than the old-fashioned kind. Show them how much more convenient hydrated lime is to handle, how much easier it is to work and how much more economical it is. Do you know that plaster and mortar from hydrated lime gains increasing strength with age? Well, it does. The older it gets, the stronger it is.

Hydrated lime can be used in more ways than lump lime can. You can sell much more hydrated lime than you ever could of the other kind, and there's no chance for loss on it. It don't air slack. It don't swell and burst the bag. As little or as much may be used as needed, and the rest will keep good for years.

We'll be glad to tell you all about it. It won't cost you more than a postage stamp to find out. The man who never investigates new things never accomplishes much in this world. It's the man who is up and doing and gets there before everybody else does—he's the man who reaps the harvest. There will always be money in hydrated lime, because hydrated lime is as staple as flour; but the men who get into the field early are the men who are going to get the bulk of the trade.

We are makers of machinery for hydrating lime. We will furnish you anything from a sprocket wheel to a complete plant, and guarantee whatever you get from us to be the best of its kind in the country. We have the most up-to-date and successful method. Our machinery is tried and tested, and we've had more real experience in this business than all our competitors put together. That's a broad statement, eh? Well, We Can Prove It.

You can't afford to wait. Write Us Now.

Ask For Our Little Book.

The Kritzer Company,
Western Ave & 17th St.,
Chicago, Ill.

WHY?

Why are the Palmer Lime & Cement Co.'s Limes in demand?
Why are they used in all principal buildings in New York, Brooklyn, and neighboring Cities?
Because they are the **best.**
Best for **finishing.**
Best for **brick** and **stone work.**
For finishing, because they will **not** pit, will **not follow** the trowel, and work **smooth** and **clean.**
For **brick** and **stone,** because they are strong, large yielders, and will lay **more** brick per barrel than any other lime on the market, therefore they are cheaper for the mason's use.

We are Sole Distributers of the—

Cheshire finishing lime, which is well known and always A 1.
Bellefonte Lime, a highly caustic chemical lime, and a large yielder for brick work, making a bond almost equal to cement mortar.
Palmer select finishing, fully guaranteed.
Palmer No. 1 common, high grade for brown and scratch coats.

Yorktown Heights lime
Connecticut White lime
Hoosac Valley lime
Hadsell White lime
} Especially adapted to brown and scratch coats.

And—

Palmer Chemical Lime, which has a universal reputation analyzing over 99% Pure Carbonate.
Alsen's American Portland Cement, for Long Island.
We **succeed** in pleasing our customers.

The Palmer Lime & Cement Co.

FOSTER F. COMSTOCK, Manager

Tel. 6610, 6611, 6612 Cortlandt.

149 Broadway, New York City.

25 Tons Put Thro Since January 1.

This is the Mill that (Clyde) built.

expressly to hydrate samples of your lime, so as to demonstrate what we can do with it.

¶ Possibly you can't arrange to visit our plant in person, but anyway ship us, say 10 barrels or so of your lime, so we can show you just what kind of hydrate it will make. We will return as much of the finished product as you want. Then have your mechanics try it for working qualities. It will cost you nothing but — the freight.

¶ As shipments are continually arriving, we would urge you to get yours on its way, so it can get back to you before building time.

¶ Our plant is open at all times to interested parties. Come, or send your lime, or both.

Write us—"We like to answer questions."

CLYDE IRON WORKS
DULUTH, MINN.

N. B.—Pack shipments in good barrels lined with heavy paper and thus avoid air-slacking. Shipments so packed have always arrived in good condition for hydrating test. Tests made to date for concerns as far East as New York and as far West as Washington.

OUR HIGH GRADE PRODUCTS

Largest Capacity of Hydrated Lime in the United States.

Woodville White Lime Company, TOLEDO, OHIO.

Big B Lime.

BIG B LIME

ITS HISTORY IS A STORY OF SUCCESS.

The Building Trades' Barometer. The Iron and Steel industry promises increased activity. It is predicted that a new tonnage record in that business will be established.

This means a large demand for LIME, and transportation facilities taxed. Isn't it wise to arrange early for your supply of LIME?

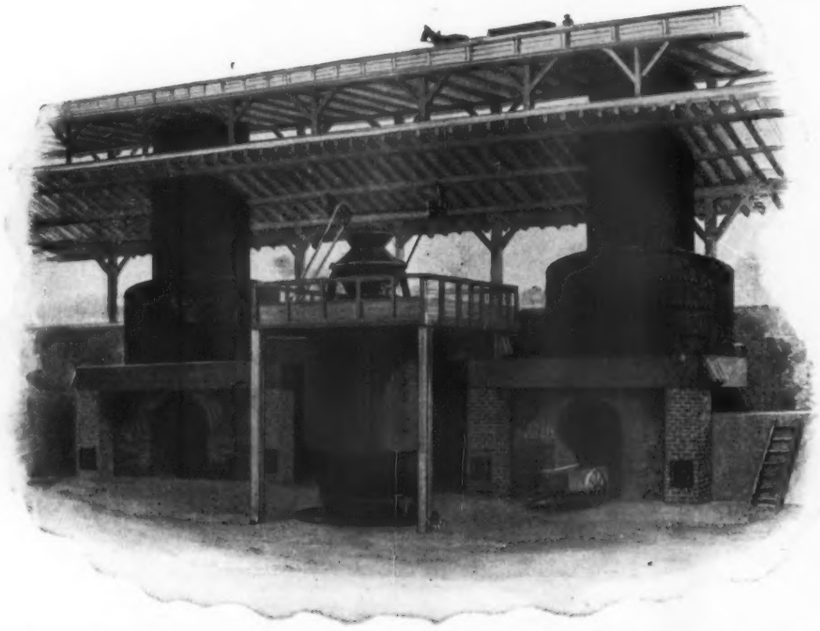
BIG B's quality is unsurpassed. That means satisfied and contented contractors for you. Our quick shipping facilities mean fresh lime on short notice.

A POSTAL CARD WILL BR'NG OUR 1905 MEMORANDUM BOOK.

THE NORRIS AND CHRISTIAN STONE AND LIME CO.
MARION, OHIO.

Gas Producer Plant of the New England Lime Co., Canaan, Connecticut.

PRODUCER GAS Makes the Best Lime It increases the Capacity of a Plant and Reduces the Fuel Bill



The Total Cost of This Installation Will be Paid for by the Saving Effected During the First Year of Operation

"We have equipped two plants for above company and are now equipping a third."

MORGAN CONSTRUCTION CO., Gas Producer Dept., Worcester, Mass.

CEMENT-KILNS

Lined with Our BAUXITE Lining Blocks

In hot zone and our special fire-clay blocks throughout the rest of Kiln can be run from three to four times as long as Kilns lined with the very best fire-clay linings. Write for booklet describing Bauxite Linings for Portland Cement Rotary Kilns.

Fire-Brick for Lime Kilns

We number among our customers many of the large Lime and Gypsum Manufacturers of the Country.

Sewer Pipe, Wall Coping, Hollow Tile
Fire Proofing, Flue Lining.

Laclede Fire-Brick Manufacturing Co.

ST. LOUIS, MO.

The Hoosac Valley Lime & Marble Co.

ADAMS, MASS.

Manufacturers of

....High-Grade Finishing Lime....

Noted For Its Quick and Even Slacking.

Now in Use in Some of the Largest Buildings Being Erected in New York City.

THOS. D. CONNORS, President. Telephone Connection New York Office: 1123 Broadway.

The Ohio and Western Lime Company,

WORKS AT
Fostoria, Ohio.
Gibsonburg, Ohio.
Sugar Ridge, Ohio.
Tiffin, Ohio.
Huntington, Indiana.
Geneva, Ohio.
Limestone, Ohio.
Lime City, Ohio.
Portage, Ohio.

MANUFACTURERS OF AND WHOLESALE DEALERS IN

Ohio White Finishing Lime, Ground Lime, Lump Lime, Fertilizer, Hydrate Lime, Cement, Plaster, Hair, &c., &c.

Capacity 8000 Barrels Per Day.

Offices: TOLEDO, O. 209-210-211 Chamber Commerce Bldg. HUNTINGTON, IND.

"IF IT IS LIME WE MAKE IT."

Lump - Barreled - Hydrated - Ground.

STRONGEST IN OHIO.

We are not connected with any Trust or Combination.

WRITE US PHONE US The Scioto Lime and Stone Company, Delaware, Ohio

DOES NOT DETERIORATE WITH AGE.

EXCELSIOR HYDRATED LIME
The Cleveland Builder's Supply Co.
CLEVELAND OHIO

WILL NOT SLACK. ALWAYS READY FOR USE.

Excelsior Hydrated Lime

A PRODUCT OF MERIT.

The best prepared Lime in the market. Is superior to hot Lime for all purposes. Will not deteriorate. Absolutely pure and free from foreign ingredients. Successfully used for more than two years by the largest users of Hydrate in the country.

SEND FOR PRICES.

MADE ONLY BY

The Cleveland Builders Supply Co. Cleveland, O.

Try us on your Portland Cement requirements

Tell 'em you saw it in ROCK PRODUCTS.

The Kelley Island Lime and Transport Co.

CLEVELAND, OHIO.

Tiger Brand White Rock Finish the best known and smoothest working Hydrated Lime manufactured.

WRITE FOR PRICES

THE LARGEST LIME MANUFACTURERS IN THE WORLD.

A. & C. Stone & Lime Co.

MANUFACTURERS OF

CRUSHED STONE AND WHITE LIME

TOTAL CAPACITY CRUSHED STONE 4000 TONS DAILY.

Plants: GREENCASTLE, IND. RIDGEVILLE, IND. PORTLAND, IND.

LIME KILNS AT PORTLAND, IND.

General Office: 17 N. Penn. Street INDIANAPOLIS

The

Strongest White Lime

ON THE MARKET

Uniform Quality — Finest Grain

The American Clay Machinery Co.
WILLOUGHBY, OHIO

May 16, 1906.

The Mitchell Lime Co.,
Mitchell, Ind.

Dear Sirs:-

Replying further to your favor of the 8th inst requesting us to advise you the result of practical test of your lime in the manufacture of sand-lime brick. We are pleased to advise you that the lime hydrated easily and the brick made from it were first-class in every respect.

We have forwarded some samples of it to Mr. Elkus of the Indianapolis Composite Brick Co. and he can probably advise you further.

Very truly yours,
The American Clay Machinery Co.
by W. J. Burke.

MITCHELL LIME COMPANY

MITCHELL, INDIANA

FOWLER & PAY,

Brown Hydraulic Lime, Austin Hydraulic Cement, Jasper Wall Plaster, Brick, Stone.

CEMENT WORKS: Austin, Minn.
PLASTER MILL: Ft. Dodge, Iowa.
WAREHOUSE: Minnesota Transfer.

MANKATO, MINN.

ASH GROVE
WHITE LIME ASSOCIATION
MANUFACTURERS OF
High Grade White Lime.
KANSAS CITY, MISSOURI.

WESTERN LIME CO.

HUNTINGTON, INDIANA
MANUFACTURERS OF

LUMP LIME

ALSO, DIAMOND BRAND SUPERIOR WHITE FINISH

A HYDRATED LIME

AND A GROUND AND FERTILIZER LIME

Capacity 4,000 barrels or 10,000 bushels per day. Capacity of Hydrated Lime, 120 tons per day. Our LUMP LIME as well as our HYDRATED LIME is the very best obtainable for all purposes for which a good lime is needed in erecting buildings. Our HYDRATED LIME is absolutely the best finishing lime on the market.

Tell 'em you saw it in ROCK PRODUCTS.

Farnam "Cheshire" Lime Co.

OF CHESHIRE, MASS.
MANUFACTURERS OF THE

Celebrated "Cheshire" Finishing Lime.

Well known throughout New York and the Eastern States as the finest finishing lime manufactured. The special feature of this lime is its quick and even slacking, thus preventing any cracking or checking when put on the wall. It is the best lime used in the country today for all

HIGH GRADE FINISHING WORK

Selling Department, 39 Cortlandt St., N. Y., C. J. CURTIN, Pres't.

ROCHESTER LIME CO.

209 Main St., West, Rochester, N. Y.

MASONS' SUPPLY DEPOT.

Manufacturers of, and Wholesale Dealers in

Snow Flake Lime, Cement Building Blocks, Alpha Portland Cement, Hoffman Rosendale Cement, Cummings Akron Cement, Kings Windsor Wall Plaster, Kings Plaster Paris, Fire Brick, Fire Clay, Dynamite, Caps, Exploders, etc.

Rockland-Rockport Lime

IS BETTER THAN THE BEST

That's the reason we sold over 60 per cent of the lime consumed in New York City last year. Quality—in sand capacity, hard walls, white finish. Economical—from start to finish.

ROCKLAND - ROCKPORT LIME CO.

FULLER BUILDING, NEW YORK.

The Bates Engineering and Construction Co.

DESIGNERS AND BUILDERS OF

Lime Kilns and Complete Lime Plants

Plans and estimates furnished for coal, wood or producer gas kilns. Designers and builders of the only known kiln that will burn a soft stone economically. Sixteen years' experience. Contracts taken in any part of the country. :: :: :: ::

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Modern Grinding Machinery

KOMINUTERS for granulating
TUBEMILLS for pulverizing

Davidsen Tubemill especially adapted for Sand-Lime Brick Work.

Silex Linings for Tubemills
Best Quality Dana Flint Pebbles
Forged Steel Balls

F. L. SMIDTH & CO.

ENGINEERS

41 Cortlandt St., NEW YORK

MACHINERY

FOR

Industrial Plants

We manufacture machinery for transmitting power, and for elevating and conveying materials in and about cement plants, rock-crushing plants, lime plants, mortar works, plaster works, and other industries.

We manufacture screw conveyors, belt conveyors, and all sorts of chain and cable conveyors, for handling rock, lime, sand, etc.

We manufacture elevators, also, for handling the same kinds of material.

Our lines include shafting, couplings, bearings, collars, pulleys, gears, rope sheaves, sprocket wheels, elevator buckets and bolts, steel elevator casings, etc.

We have our own foundry, sheet metal department and machine shop. We employ first-class help in all departments and use high-grade materials.

When you are in need of anything in our line, try us.

Catalogue No. 28.

H. W. Caldwell & Son Co.

17th St. and Western Ave., Chicago

95 Liberty St., New York City
Woodward, Wight & Co., Ltd., New Orleans, La.

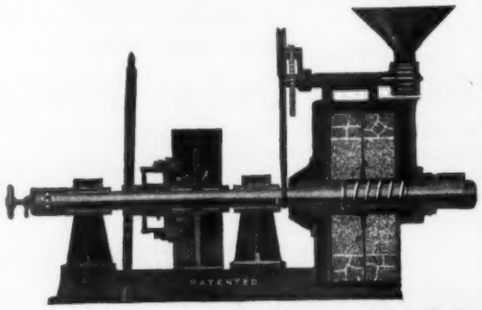
STURTEVANT GRINDING MILLS

SIX KINDS

FOR

Hard, Soft or Medium Rock.

Produce a finished product without screens.



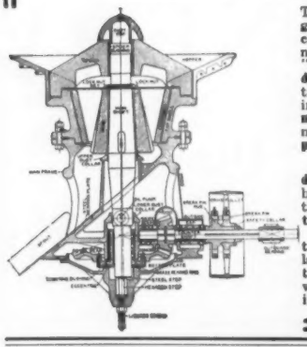
SEND FOR CATALOGUE

OF

ROCK AND ORE REDUCING MACHINERY.

STURTEVANT MILL COMPANY 105 CLAYTON STREET. **BOSTON, MASS.**

THE AUSTIN GYRATORY CRUSHER IS THE ONLY ONE HAVING AN AUTOMATIC OILING SYSTEM.



The **strain** on the **bearings** of a gyratory crusher is so great that if **dust** reaches them or if **imperfectly** lubricated they are certain to be quickly destroyed and the machine laid up for repairs. The bearings of the "Austin" are enclosed in a **double** chamber—**absolutely dust proof**—and are lubricated by a constant circulation of **live** oil forced through the main **eccentric** bearing—which is the life of the machine—by an **automatic** pump operated directly by the gyratory movement of the main shaft. The lubrication must be **perfect** because the flow of oil is **constant** and **positive**.

In all other gyratory crushers there is only the **discharge** diaphragm to separate the **dust** from the bearings and **gears**, and a side door opens directly into the chamber containing the **bearings**. Dust gets into this receptacle readily and destroys the **gears**.

Immediately below the crushing head, in the "Austin" is placed the discharge diaphragm with dust collar the same as in any other gyratory crusher. Below this partition is a **second** diaphragm also provided with dust collar around the shaft and a dust cap covering the pinion, contained in no other crusher, enclosing the bearings in a **double dust proof** chamber and making it **simply impossible** for dust to reach the bearings.

At the bottom of the frame in the "Austin" is an **oil cellar** which is filled with oil to the level of the center of teeth in the main gear.

An **automatic** pump draws **pure oil** from this cellar, forces it through the **eccentric** and counter shaft **bearings** and any oil thrown from the teeth of the driving gear is caught by the cap and carried back to the **cellar**.

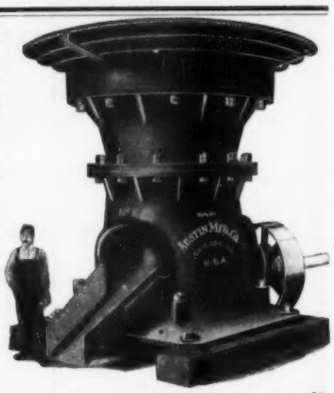
At the **bottom** of the cellar is a drain by means of which the **impure** oil can be removed insuring **absolutely perfect** lubrication because every part of the bearings operates **continuously** in a bath of **pure** oil.

One never has to expose the bearings of the "Austin" to **dust** when in operation. Fill the oil cellar to the required height and the machine **must** oil itself since no oil can **escape** from the oil cellar and therefore maintains a **constant** level.

Sizes for all requirements.

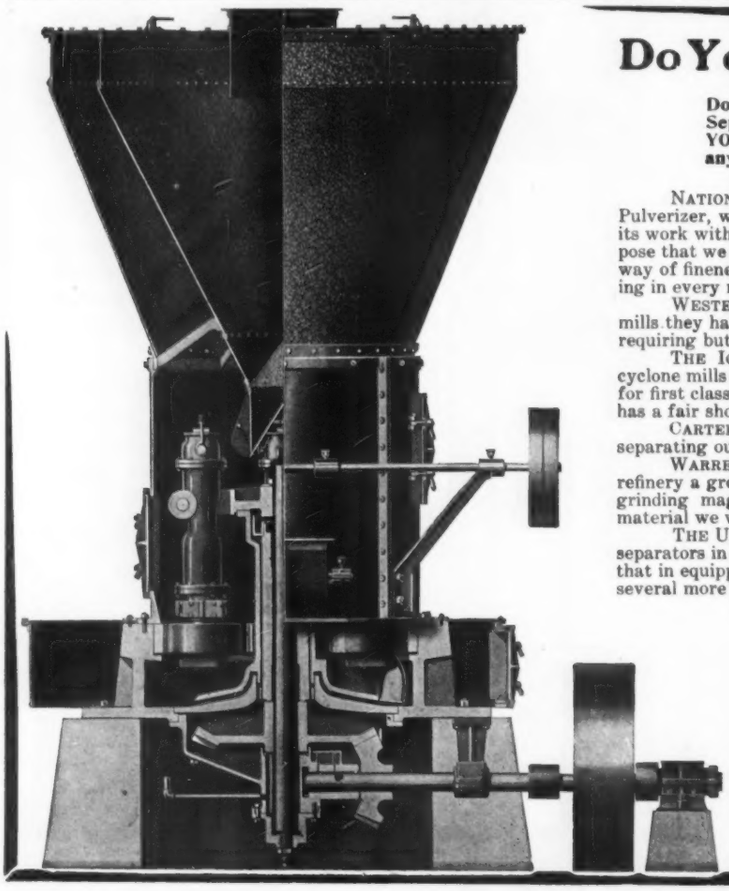
We are the world's largest builders of rock and earth handling machinery.

Catalogues of all departments on request.



Austin Manufacturing Co. Chicago, U. S. A.

New York Office, Park Row Building



Do You Grind Paints or Pigments?

Do you use the Raymond System of Pulverization and Air Separation? Would you use it if you knew it would SAVE YOU MONEY and INCREASE YOUR EARNINGS? Write to any of the following satisfied customers:

NATIONAL LEAD CO., Chicago: We are very glad to say that the Raymond Pulverizer, which we have used in our oxide works for several years past, has done its work with perfect satisfaction, and we consider it the best machine for that purpose that we know anything of. It gives a very uniform and regular product in the way of fineness, and does not get out of order easily, being very reliable in its working in every respect.

WESTERN DRY COLOR CO., Chicago: In the three years we have used your mills they have worked to our satisfaction, turning out a uniform fine product and requiring but few repairs.

THE IOWA PAINT MFG. CO., Fort Dodge, Ia. We have used one of your cyclone mills for eleven years, and we highly recommend it after that long service for first class pulverizing work. Your machinery needs but little attention and if it has a fair show it will give perfect satisfaction.

CARTER WHITE LEAD WORKS, Chicago: We have used your Separator for separating out tailings from the red lead and litharge with satisfactory results.

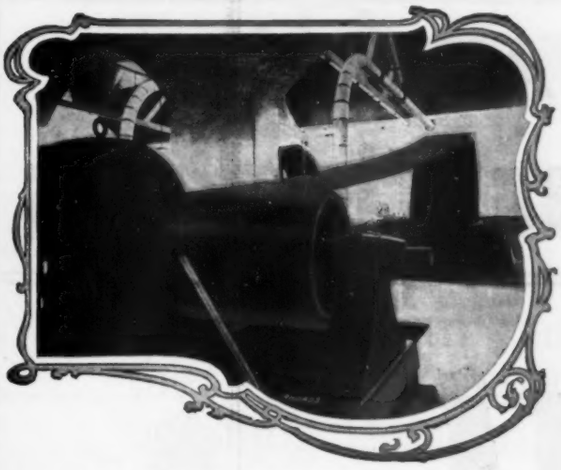
WARREN BROTHERS CO., Boston, Mass. We have been using your mill at our refinery a great deal in the last three years and during the past six months have been grinding magnesite with it, getting 75% passing 200 mesh screen. This latter material we were unable to grind to this fineness with any other mill.

THE UNITED TATES GRAPHITE CO., Saginaw, Mich. We have used your separators in our plant here at Saginaw upwards of ten years with such satisfaction that in equipping the new plant which we moved into only a year ago. we installed several more of them.

These are a few out of the many. all highly satisfied users of the RAYMOND SYSTEM. How would you like to travel in their care-free class?

Raymond Bros. Impact Pulverizer Co.

141 Laflin Street. **CHICAGO**



43-inch Three-ply Rhoads Volta Dynamo Belt.

Rhoads Leather Belting

For high speed under the trying conditions of cement mills, Rhoads high grade short lap has long proved its superiority in service.

Rhoads Cement Mill Belt Dressing is specially compounded to avoid caking in the surface. It preserves the belt and gives it grip. It is a trouble saver.

Write for our Catalogue. It Gives Much Information of Value to Belt Users.

J. E. RHOADS & SONS,

PHILADELPHIA: 12 North Third Street.

NEW YORK: 40 Fulton Street. **Factory: Wilmington, Delaware**

THE TIES THAT BIND

a brick wall *Better* than any on the market are the *Leader and Acme* Wall Ties for solid or veneer walls. Manufactured by

Specialty Manufacturing Co.

1221 Grant Avenue,

WRITE FOR PRICES. **ALLEGHANY, PA.**

RANSOME TWISTED STEEL BARS

For Reinforced Concrete Construction.

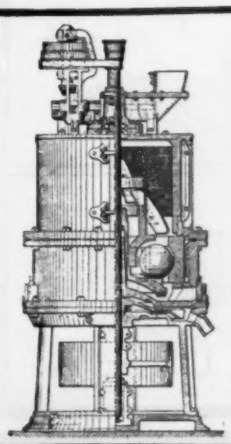
IMMEDIATE SHIPMENT. ALL SIZES IN STOCK.

No charge for cutting to required lengths.

WILLIAM B. HOUGH COMPANY,

13th Floor, Monadnock Building, :: :: :: CHICAGO.

Long Distance Phone, Harrison 1886.



Fuller-Lehigh Pulverizer Mill

The Best Pulverizing Mill Manufactured

Exhaustive tests in all departments, in competition with the most approved grinding machines in use, have demonstrated the superiority of our machine

OUR CLAIMS:

Greater Output **Better Fineness** **Fewer Repairs** **Dustless**

Few extracts from letters receive

"With the four we are now ordering we will have in use 16 Fuller Mills in all, and I think you can hope to get orders from us within the very near future for quite as many more."

"We have to say for your Fuller Mill that it is unqualifiedly the best grinding device we have ever tried on our lime rock and eminently satisfactory to us."

"We are pulverizing with one Ball Mill and four Fuller Mills sufficient raw material to produce nearly 1200 barrels of clinkers per day, which record I believe can not be approached by any other mill on the market."

If interested, write us for further information

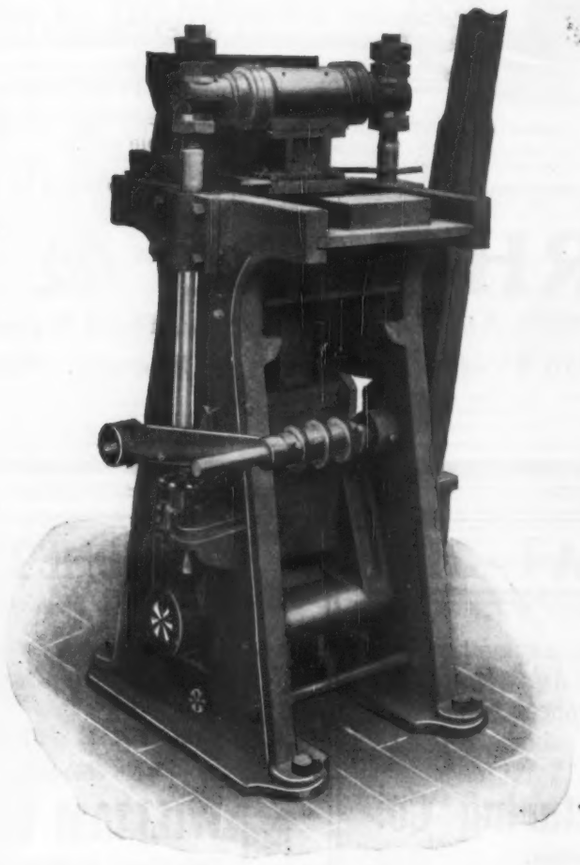
LEHIGH CAR, WHEEL & AXLE WORKS, CATASAUQUA, PA. U. S. A.

Tell 'em you saw it in ROCK PRODUCTS.

THE GRATH
Special Hand Power Brick Press

For Highest Grade Press Brick from Sand-Lime, Dry or Semi-Dry Clay.

For Plain and Ornamental Brick.



The only Hand Power Press Guaranteed against Breakage.

Twenty-Eight in Use, all Giving Satisfaction.
If you are Making Press Brick you Need one Also.

For Press Brick Machinery, any Capacity and Guaranteed to be the Best, send for our Catalogue.
Satisfaction Guaranteed.

Illinois Supply and Construction Company

512 and 513 Holland Building. ST. LOUIS, MO., U. S. A.

"Brownhoist" Locomotive Crane

Equipped with clam-shell loading bucket offers the greatest capacity as well as economy for handling sand and gravel in the pit. Crushed stone and screenings loaded and rehandled at minimum cost.

Advance Your Profits by Increasing the Output.

The Brown Hoisting Machinery Co.

CLEVELAND, OHIO

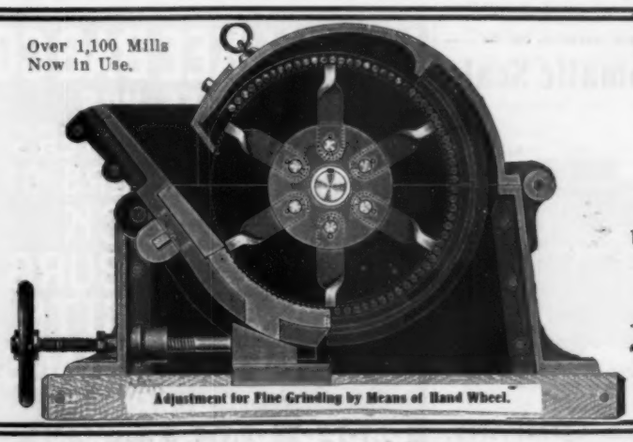
Rock Drills :: Bits :: Bit Sharpeners

The Equipment for Rapid and Economical Drilling.

Write for Catalog

HARDSOCG WONDER DRILL CO. Ottumwa, Iowa, U. S. A.

Over 1,100 Mills Now in Use.



Adjustment for Fine Grinding by Means of Hand Wheel.

RAW MATERIAL Grinders

UNIVERSAL for Tube Mill Feed, 800 bbls. per day 20 mesh.
VULCANITE for ½ in., ¼ in. and ⅛ in. work.
We also grind Lime, Gysum, Coal, Etc.

Write for Bulletin No. 12.

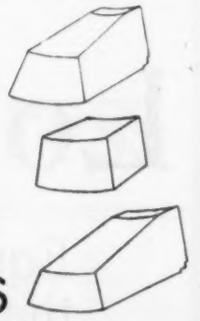
The Williams Pat. Crusher & Pulverizer Co.,

Old Colony Building. CHICAGO.

Tell 'em you saw it in ROCK PRODUCTS.

ROTARY CEMENT LINERS.

IRONTON CROWN.



LIME KILN LININGS.

GROUND CLAY FOR WALL PLASTER AND BOILER SETTINGS

DIRECT HEAT

DRYERS

—FOR—

BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue S. C.

American Process Company

62-64 William Street, NEW YORK CITY

RUGGLES - COLES

DRYERS

RUGGLES-COLES ENGINEERING CO.

NEW YORK CHICAGO

Cummer Dryers

See Other Ad. Page 76.

THE F. D. CUMMER & SON CO., Cleveland, Ohio.

BRICK and MORTAR COLORING

After twenty years "CLINTON" colors still stand at the head. Get the genuine, with the "Little Yellow Side-Label."

CORRESPONDENCE SOLICITED.

CLINTON METALLIC PAINT CO., CLINTON, N. Y.

J. K. WILLIAMS & CO.

EASTON, PA.

The Largest Manufacturers in the U. S.

BRICK AND MORTAR

COLORING

OF ALL SHADES.

Correspondence Solicited. Samples and Estimates cheerfully furnished on application.

S. W. SHOOP & CO.

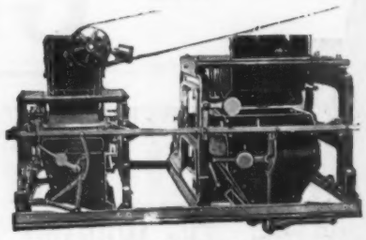
ALTOONA, PENNSYLVANIA

Designers and Builders of the SHOOP IMPROVED PATENT LIME KILNS. Designing and Installing a Specialty.

YOU may make a mistake in your mixtures, but the

Richardson Automatic Scale

CAN NOT



The Richardson weighs accurately, proportions of Sand, Lime, Brick, Color and any other materials.

RICHARDSON SCALE COMPANY,
18-20 Park Row, NEW YORK
also Chicago and New Orleans

MILWAUKEE BAG CO.

MILWAUKEE, WIS.

HIGH GRADE PRINTERS & MANUFACTURERS OF

DUCK, OSNABURG AND JUTE CEMENT BAGS.

DEALERS IN

PAPER BAGS & TWINES.

WRITE FOR PRICES & SAMPLES.

Rock Products
DEVOTED TO THE PRODUCTION OF ROCK AND ITS PRODUCTS

SEMI-MONTHLY.

Entered as second-class matter December 16, 1905, at the Post Office at Louisville, Ky., under Act of Congress of March 3, 1879.

THE FRANCIS PUBLISHING COMPANY,
Publishers.

E. H. DEFEBAUGH.....President.

A semi-monthly trade journal devoted to the interests of the manufacturers and dealers in rock products and kindred lines, including Lime, Cement, Salt, Sand, Slate, Granite, Marble, Sandstone, Grindstones, Artificial Stone, Emery Stone, Quarries, Monuments, Manganese, Asphalt, Phosphates, Plaster, Terra Cotta, Roofing and Roofing Tile, Coal, Oil, Mineral Wool, Brick, etc.

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The mission of ROCK PRODUCTS is to serve the trade in any and every honorable way possible, to promote better profits and make life more pleasant for those engaged in the business to which it caters. With this end in view, criticism is courted, and all are invited to use its columns to further ideas and suggestions for the good of the trade. The office, too, is at the service of the constituents of this paper; so when you want to buy or sell, or merely ask a question, write, and when you are in town, call and make it your headquarters.

"Tell 'em You Saw It in Rock Products."

☞ No contracts will be accepted with advertising agencies, as our system for promoting the interests of patrons requires direct co-operation.

☞ Matter for publication to insure insertion in any given number must reach this office at least ten days preceding the date of the paper. This measure is made necessary by the rapid growth of circulation, taking more time in the printing department.

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LOUISVILLE, KY., APRIL 22, 1907

The Cost of Teaming.

The price of teams and the cost of teaming are items that have a tremendous bearing upon the delivery of all classes of building materials. The item of hauling in the specifications of a decade ago was a trivial proposition indeed, but today it has grown to an enormous proportion.

The burden of the cost of teaming frequently decides in these days the availability of one kind of material over another for any special work. In spite of the introduction of the electric car and the automobile the supply of horses and mules is short in every part of the country. Dealers and contractors are paying $200.00 and even $250.00 for the same kind of horses that were a drug on the market ten years ago for $30.00 to $40.00. Many horses and mules have been taken out of this country by wars in foreign parts of the world, and the raising of horses has been well nigh abandoned so that now it is just a question of waiting until another supply of draught horses can be raised, and in the meantime paying the price of our own folly.

The automobile has been introduced to a trivial extent for delivery wagons in some of the larger cities, but the enormous first cost will likely prevent them from ever retiring the draught horse perpetually. The wages of teamsters has increased just about a 100 per cent in the last three years, and since they have formed themselves into unions with restrictions about handling the load upon their wagons and making themselves generally useful about their work the teamsters now consider that they have nothing to do but to look after the animals, the harness, and the vehicle, and this adds to the cost at least another 50 per cent. There are cases on record where the teaming cost is twice as much as the total value of the load upon the wagon, so that teaming has got to be one of the big items in every extensive construction proposition.

It costs as much to deliver a single barrel of lime or cement as it does to deliver a full load of eight or ten barrels, so that the only possible economy to be found at the present time is to use the teams to deliver only full loads and require the smaller customers who get less than a wagon load to come to the warehouse for their materials. In some cities the supply dealers have an agreement to this effect and require all customers of less than wagon loads to come after their material, and where they are forced to accommodate a customer with the delivery of a single barrel of lime or cement they add a specified minimum charge for hauling to the price quoted at the time of sale.

The Jamestown Exposition.

Summer time is the busy season for those engaged in the building line, whether it be as architect, contractor or supply man. The Jamestown Exposition which takes place this summer, will collectively present a valuable comparative study for every man who is interested in construction from any standpoint, and all the builders of the country should make it a point to visit Jamestown so that the lesson to be learned there may be dispersed as widely as possible and carried to every community in the land by the men who are most interested in and most capable of giving the country the best results. Expositions and fairs on account of their temporary nature and the indispensable holiday feature which they represent, must always take place in the summer time. It will certainly be inconvenient for many a business man to get away from the grind when business is rushing, but the game is really worth the candle, and if you make arrangements in advance it is not so hard to get the necessary time for this important as well as enjoyable educational feature.

The car shortage troubles are said to be getting slightly easier, but it has been a long drag.

There is a pronounced improvement in the quality of concrete building blocks that are being offered for sale this season over anything we have seen heretofore.

Concrete construction is making rapid strides toward general adoption and popularity in New York, where it has waited for an introduction longer than any of the great cities.

In some localities the sand-cement brick has gained such a hold that lumber dealers have gone into the business and recommend them for veneering walls. Some very beautiful houses of this description have been completed and others are being erected.

The new home of Rock Products is located at located at 355 Dearborn street, Chicago, Ill. Take the elevator to the seventh floor where cordial welcome awaits all of our friends and those interested in the materials that are employed in any kind of building construction.

The way the vitrified brick manufacturers of the upper Ohio are making big cargo deliveries on model barges at the cities and towns along the great national highway of the west, indicates that they are doing a good business and that the muicipal improvements are not waning by any means.

At several places in the West and Northwest the leading monument dealers have taken up the manufacture of concrete building block as a side line. As a rule these are reliable business men with sufficient capital and well grounded structural experience that make them a valuable acquisition to this branch of the industry.

Among the other features of the Jamestown Fair the application of all kinds of building material will constitute a feast for the handlers and users. Especially is this said to be true with regard to the manifold applications of cement and gypsum plaster manufactures. The best workmen in the world are using the best materials that the world has ever seen up to this time to produce the most beautiful and artistic effects that modern learning and skill can suggest.

The way that large engineering propositions are being undertaken in all parts of the country would seem to indicate that the Portland cement manufacturers will have to raise the "ante" and produce 55,000,000 barrels of Portland cement instead of 50,000,000 as they first resolved at the beginning of the year. If the intelligent improvement of the Western rivers had reached the stage of serious contemplation there is simply no telling how short the supply would look at this time. When the big railroad and municipal jobs are taken into consideration even the big figures of modern outputs shrink into insignificance.

Portland cement, on account of the intelligent basis of its manufacture, is always the criterion for comparative discussion of freight rates, shipping facilities, and the like when dealers are holding a convention. When the cement manufacturers working in conjunction with the American Society for Testing Materials, adopted the "standard specifications" they secured this prestige for their material. The popularity of Portland cement is indeed well founded, because the reliability of the product is guaranteed where the standard specifications are followed. The integrity of the manufacturer in sustaining the standard specifications in the manufacture of his especial brand is beyond question.

The supply dealers of the Middle West and the South have but one nightmare to disturb their dreams in view of the splendid roll of specifications that they have to figure on. Banquo's Ghost will strut across that vacant space in the warehouse that was once filled with cement. The emptiness is caused in every case by the lack of adequate accommodation with regard to delivery. Oh, yes! the cement is ordered all right enough, but the contractors are accommodating to prevent the cement from reaching the dealer's warehouse. There is no trouble in fact about delivery, for there are places where the arrival of a car of cement is hailed with much joy, and there is no demurrage paid on the car loaded with cement so that anybody could notice it.

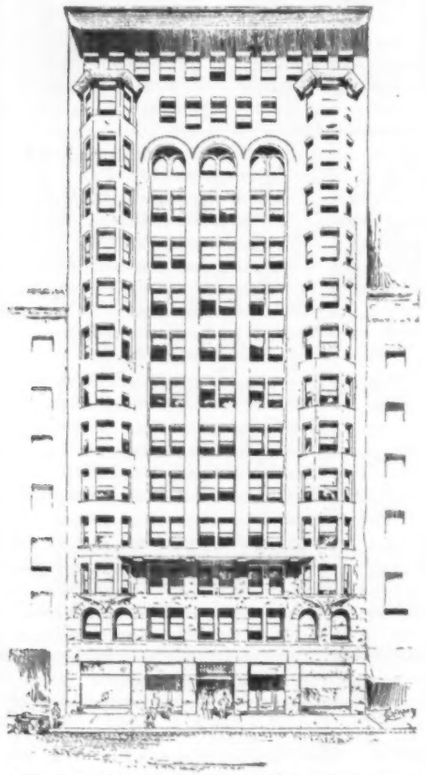
Many of the troubles which have been a problem to the lime manufacturers find a complete solution when they begin to hydrate their product and sell it in that shape. Hydrated lime never air slacks, the product of the plant is much more nearly uniform, and the reputation of the goods is not so much in the hands of people who don't understand that it takes time to make lime putty by the use of common lump lime and water. It looks as if the time is fast approaching when to be a lime manufacturer is synonymous with being a hydrator of lime. Since it is now demonstrated that hydrated lime is at once more economical and a decided improvement in the quality of the material itself, the testimony is all in and the result is what is happening now. Whoever is making lime is either hydrating or getting ready for hydrating.

Editorial Chat

Our Headquarters After May 1, Chicago, Ill.

ROCK PRODUCTS was born in the city of Louisville five years ago April 1. It has grown from a small monthly publication with no clientage to start with to a semi-monthly paper with a clientage all over the world. To enlarge its usefulness it has been the purpose of the publishers since the beginning to locate its main office in the city of Chicago, with an equally important office in the city of New York, so that our list of advertisers and readers can be accommodated with the best press service. As we have collected the information of the greatest value to the trade, our office will be at your service.

In order to be able to meet with you oftener we have selected commodious quarters in the Ellsworth building, at 355 Dearborn Street, Chicago, where we will be permanently located May 1. We have secured all the Dearborn Street side of the building on the seventh floor where we can accommodate a larger production of the only paper in the trade that makes it a point to have its men visit the manufacturer, dealer, contractor and architect from Maine to California. Every visitor to Chicago or New York is welcome at our sanctum, where we



ELLSWORTH BUILDING, 355 DEARBORN STREET, CHICAGO, NEW HOME OF ROCK PRODUCTS.

will always be at your service, with enlarged force made possible by the increased business already on our books and combining the offices of three publications controlled by the publishers of ROCK PRODUCTS. There is not anything in daily, weekly or monthly service that you can not get from the office of ROCK PRODUCTS. The picture of the new building will give you some idea of its importance. It has an entrance on 90 Plymouth Place and runs through from 353 and 357 Dearborn Street, and has a frontage of 75 feet; steel construction, fireproof, and is first class in every particular. The halls and corridors, including floors, are finished in marble and the interior work in the office in mahoganized curly birch with tuna finish.

This move, we believe, is for the material interest of our patrons and the publishers, and we trust by locating more centrally we may retain your friendly interest and co-operation, for the policy of this paper has been since its beginning to aid every branch of the industry with malice towards none and endeavor to work for the good of all. Believing we are a part of the industry we cover, we have had for our aim to make our influence felt for better things and greater results to the manufacturer and dealer.

The headquarters of ROCK PRODUCTS in the Ellsworth Building is within easy reach of every visitor to Chicago. It is only a block and a half from the Polk Street depot, two blocks from the Lake Shore & Michigan Southern depot, a few blocks from the Grand Central depot, three blocks from the Auditorium Hotel, two blocks south of the Great Northern Hotel, three blocks from the Grand Pacific Hotel, two blocks from the elevated railway station, and while we are not within the loop in Chicago, we are right across the street from our printing office, which, by the way, is the largest printing house for trade papers in the United States, the Regan Printing House.

Universal Office in Pittsburg.

The Universal Portland Cement Co., of Chicago, Ill., have established an Eastern sales office at Pittsburg, 524 Frick Building. B. H. Rader will have charge of this office and the great city of Pittsburg will be all to the good by the acquisition of such a live and pushing citizen. Everybody who ever went to a cement users' convention knows "Universal Rader," and there have been no important lettings in years that he hasn't been somewhere around to represent the interests of his brand of cement that goes under the big blue seal. The new mill down in the neighborhood of Pittsburg is rapidly approaching completion and soon there will be cement ready for delivery. We did intend to print a picture of Mr. Rader, but upon second thought we find it is entirely unnecessary because he is already so well known, in fact, it is just this way. Once upon a time he had a girl and he gave her the only picture that he ever had taken. Later on they found it was all off between them, but she refused to send back any of the present and that's why he has no picture of himself at the present time, although we have a faint suspicion that if the first girl had given it back some one of the later 222 would have cinched it by this time. After all it wouldn't do to print our friend Rader's face in ROCK PRODUCTS since he is going to live in Pittsburg, for it would be a slam on the high society of Chicago for letting such a handsome man escape.

Prospects Look Good.

M. K. Sawyer, the eastern representative of the Perfection Block Machine Co., of Minneapolis, informs us that he has taken up his headquarters for the season at the Cadillac Hotel, Forty-third street and Broadway, New York. Mr. Sawyer has successfully introduced the Perfection Power Block Machine in his territory, for making hollow building blocks under pressure and completing the operation by vapor curing. There are several of the big machines working in the immediate vicinity of New York, and they have been profit makers for the operators, because Mr. Sawyer just wouldn't let men sell the blocks too cheaply. He is an expert, backed up with something like thirty-five years experience and careful observation in the handling of all kinds of plastic material. The concrete building block business fits right into his hands and was easy for him to master because he knew all the preliminaries before there was any attempt to introduce the block. He says: "The orange trees had not bloomed out on the snow-clad plains of Minnesota at the date of his departure, but the honeysuckles were budding" and it began to look as if they were really going to have some spring right away, although it is not due until just before the Fourth of July. Mr. Sawyer says he has every assurance of turning up a fine lot of business this season.

W. H. Ford, sales manager of the Kosmos Portland Cement Co., Louisville, Ky., and W. W. Fisher, the distributer of Kosmos at Memphis, came into the ROCK PRODUCTS' sanctum together recently. This was signal enough to hoist the banner and fire a salute. There was a pleasant impromptu entertainment at which Ford presided, but just how he lost his hat no one can tell, and Fisher's umbrella went up in the conflagration. Mr. North, the man who runs the Illinois Central railroad trains, was there, and the dinner lasted until ROCK PRODUCTS detailed a special man to accompany Fisher to Memphis. If this solution had not occurred the party would never have broken up, for between Mr. North's French, Mr. Fisher's German, and the host's Southern dialect the builders of the Tower of Babel were not in the running. None of that party have been heard of since except Mr. Ford, who sends a post card from Charleston, S. C., which indicates that he had gone to the home of his youth to take a rest.

C. A. Monks, of the Southern Roofing and Paving Co., Louisville, Ky., is a leading concrete contractor whose specialty runs in the line of reinforced concrete. He wears a smile on his countenance these days because, as he puts it, "I've selected a nice bunch of grapes in the shape of choice contracts to take the company's season's operations, both in this city, where concrete construction has become popular and in neighboring towns." Mr. Monks is one of the early contractors to get into reinforced concrete and is partial to the Ransome twisted bar, having used it from the first in all his work.

A. A. Pauly, Youngstown, O., is a busy man these days, what with introducing his wall machine at New York and other prominent Eastern construction centers, his immense sand and gravel operations at the plant of the Concrete Sand and Stone Co., of which he is the president at Youngstown, and his extensive manufacturing interests in the line of concrete building material, with the construction and contracting branch thrown in for good measure every moment that his time is taken up. Every branch of his business is growing to such an extent that he is continually increasing the volume of capacity in one branch after another. Like Edison he never starts anything he can't finish, and he has started a good many things at that.

Chas. A. Matcham, Allentown, Pa., has invented and patented a process for the burning of cement clinkers in a horizontal kiln. The process consists in feeding the cement composition into one end of the kiln while at the other end powdered coal is fed into the kiln by means of an induced draught, and it is estimated that the process contains appreciable economy. Mr. Matcham has been close up in matters relating to the manufacture of cement for years, and has given a great deal of study to the manufacturing economy.

The county commissioners of Kokomo, Howard county, Ind., are receiving bids for the construction of two concrete arch bridges to be completed sometime in the present summer. Here's a chance for the bride contractors in concrete to get busy.

Robert Morris, president of the Central Concrete Construction Co., Louisville, Ky., announces that his concern is full of business on all classes of concrete construction. They are extensive manufacturers of concrete block and have developed a system of their own for molding special design courses according to drawing by means of wooden patterns which are produced in their own pattern shops. They have recently put in a steam curing system in order to increase the capacity of their block factory and to give uniformity in their blocks. The construction department of this concern is under the direction of experienced and capable engineers and draughtsmen, and they are making a record in concrete construction in all its branches.

Frederick E. Paulson, who keeps his home at the Indianapolis office of the Lehigh Portland Cement Co., was a Louisville visitor recently. He was looking up the accommodations for delivery of cement to some of his Southern customers. Fred says that he could sell the output of the big Lehigh mill at Mitchell ten times over if he could only secure deliveries.

Recently the Cement Machinery Co., of Jackson, Mich., was submitted by a well known inventor a proposition for an adjustable sill, cap and step mold, which was immediately accepted and later named the practical adjustable sill, cap and step mold and placed upon the market.

Orders for these molds are arriving at the Cement Machinery office at the rate of on an average of fifteen a day and a glimpse at the circular pertaining to this mold will satisfy any conservative cement worker or contractor, it is said that its practicability and wide range of work for solid concrete products is invaluable. It is said that this mold can be adjusted from seventy-two inches down to twelve inches in length, and from five inches to fourteen inches in width, and being eight inches high it is adapted to the widest range of work possible.

From Our Own

Correspondents.

GREATER NEW YORK.

NEW YORK, April 20.—At the office of the Pennsylvania Cement Co., 26 Cortlandt Street, it is reported that the extensive improvements being made at their mills are well under way. These include the installation of three 125-foot kilns, new concrete storage bins, enlarged boiler capacity and many other alterations. When the work is completed the plant will have a capacity of about 4,000 barrels a day, against the 1,000 barrel capacity for which the plant was originally designed. A feature in the new improvements is a Weber steel and concrete chimney 200 feet in height. The chimney is to take the place of a forced draught apparatus. Mr. Bale, the sales agent of the Pennsylvania Cement Co., says that his company is enjoying an excellent business. One of the large contracts on hand at the present time is the furnishing of all the cement being used in the construction of a large dam on the Yadkin River at Whitney, N. C. The contract will require over 300,000 barrels of Pennsylvania Portland cement.

The T. A. Gillespie Co., whose office is in the Empire Building, are constructing this large dam which will be used to create water power for the operation of large cotton mills in the district. The up and down stream faces of the dam are of granite, while the interior of the structure is concrete. J. J. Kennedy, of 52 Broadway, is the engineer and designer of the work.

The Roebling Construction Co., with offices in the Flatiron Building, are at present at work upon the foundation and concrete work of the new Grand Central Station of the New York Central. This is one of the largest jobs of concrete construction now going on in New York.

A visit to the office of the Austin Manufacturing Co., in the Park Row Building, found Frank Powell in charge, while J. N. Blackstone, the New York manager of the company, was on a trip through the New England States. This company reports that business for the months of January, February and March was exceptionally good but at the present time there seems to be a slight falling off. A complete Austin equipment has lately been installed at Cliffside, New Jersey, for Nicola Scioli, a general contractor and manufacturer of paving blocks and other building materials.

Mr. Scott, secretary and treasurer of the New York Cement Stone Co., 1 Madison Avenue, reports that his company has lately sold to John Donaldson, of Richmond Hill, Staten Island, the New York City rights, as well as a number of adjoining counties, for the manufacture of Roman stone under the Stevens patents. Mr. Donaldson has met with considerable success thus far in his venture and finds a continually increasing demand for his product.

Edward R. Diggs, president of the New York Cement Stone Co., is at present in Newark, N. J., where he has gone with the expectation of organizing a New Jersey company.

Mr. Abbe, president of the J. R. Alsing Co., 136 Liberty Street, manufacturers and engineers, says that his firm has been busy, especially in the lines of pulverizing machinery and dryers. Business continues good and prospects are bright for the future. The J. R. Alsing Co. are now working on a complete equipment for a large cement plant to be built near the city of Kobe in Japan. The shipment will comprise over four hundred tons of machinery with an approximate cost of $80,000.00.

The rapid growth of business of the Traylor Engineering Co., engineers and manufacturers, has necessitated the removal of their offices from 114 Liberty Street to more commodious quarters, and from now on they will occupy the top floor of the new United States Express Building, at 54-56 Trinity Place. Although this company is not yet four years old it has rapidly come to the front and stands among the first of metallurgical engineering and manufacturing institutions. The New York office of the company employs from forty to sixty expert engineers, while the entire force numbers upwards of one hundred people. The plant of the Traylor Engineering Co. is located at Allentown, Pa.

The Planet Cement Co., of 1 Madison Avenue, who are Eastern agents for Phoenix Portland cement and I X L Rosendale cement, report that business has been good and there is every reason to look forward to a record breaking year.

The New York Cement Co., 17 Battery Place, manufacturers of Rosendale hydraulic cement, whose plant was destroyed by fire in December, will rebuild their works.

Albert Moyer, New York manager of the Vulcanite Portland Cement Co., is in Chicago. His company has lately furnished the cement which was used in the construction of the "Monolith," a twelve-story office building of reinforced concrete. Samuel Green, the builder of the "Monolith," is much pleased with the results obtained with Vulcanite.

Mr. Churchill, New York manager of the Edison Portland Cement Co., whose office is in the St. James Building, Twenty-sixth Street and Broadway, says that his company is doing an excellent business.

Arthur Koppel Co., of 66 Broad Street, whose works are located in Pittsburg, have lately made some large installations of their cast steel wheel cars in many large plants throughout the country.

J. N. Stranahan, of the Consolidated Rosendale Cement Co., who has just returned from an extensive trip, says that his company is enjoying good business.

Samuel Green, the builder and owner of the "Monolith," the twelve-story reinforced concrete office building, is organizing a company to make a specialty of concrete construction. His present office is 43-45 West Thirty-fourth Street.

The Richardson Scale Co., whose offices have been located in the Park Row Building, have rented larger quarters and will now be permanently located at No. 3 Park Row. Mr. Wells, of the company, says that business has been good.

The New York office of H. W. Caldwell & Son Co., 95 Liberty Street, reports a good business in machinery for all classes of industrial plants.

Mr. Coles, of the Ruggles-Coles Engineering Co., 39 Cortlandt Street, says business has never before been so good with them. This is especially true with regard to dryers.

E. A. Westerfield, 39 Cortlandt Street, who represents the American Sand-Lime Brick Co., reports a good business, with prospects for a continuance of the present conditions.

Curtin-Ruggles Co., reinforced concrete construction engineers, 39-41 Cortlandt Street, report that they have enough contracts on hand at the present time to keep them busy until winter. At present this company is rebuilding the entire plant of the Orford Copper Co., a large smelting concern, in which work will be involved concrete construction to the amount of $500,000.00.

A Problem for the Edison Co.

It is reported that farmers in the vicinity of the Edison cement works at New Village are complaining of the large clouds of dust coming from the plant and settling on their crops for many miles around. As soon as Mr. Edison returns from his vacation it is said that he will set about to devise some means of catching this dust. Probably this will be done by placing dust catchers at the tops of the various stacks about the plant. Mr. Edison has already done some preliminary work with a view to remedying the condition.

Within a few days work will be begun on the building of the second subway. The contract for the first section of the new Brooklyn bridge subway loop was awarded April 18 by the Rapid Transit Board to the Degnon Contracting Co., the lowest bidder, which got the contract for the loop at $2,952,000.00, and the contract for the pipe galleries at $83,000.00. The contract stipulates that the loop must be completed within twenty-one months. The commissioners expected a legal fight before the awarding of the contract, but were delighted to find that there would be no trouble. An injunction suit had been threatened and it was feared that when the board met that something might happen to tie up the contract and delay its being awarded before the proposed Hughes Utilities Commission comes into office. Four other contracts for other sections of the Brooklyn Bridge loop are to follow in rapid succession. The board has fixed May 9 as the date for a public hearing on the form of contract for the sections between Pearl Street and the Brooklyn bridge and from the Bowery to Norfolk Street, in Delancey Street. Bids for these are to be advertised for at once.

Chief Engineer Nelson P. Lewis, of the Board of Estimate, by direction of Mayor McClellan, has prepared the following list of expenditures which will be devoted to the many new projects of the city. Provision for these improvements must be made before January 10, 1910. Chief Engineer Lewis says that the figures given in several cases are purely estimates and that the actual cost may be much higher. The list does not include more than 100,000,000.00 of mammoth enterprises work on which is already in progress:

Subway loop, Manhattan section	$5,000,000
Subway loop, Brooklyn section	10,000,000
Rapid Transit line, Manhattan and the Bronx	35,000,000
Pipe galleries in same	8,000,000
Rapid Transit Line to Coney Island	15,000,000
Reconstruction Brooklyn Bridge terminal	3,250,000
Office building at Manhattan end of Brooklyn Bridge	3,500,000
Land for structural approaches to Manhattan Bridge	6,000,000
Land for Manhattan approach to Blackwell's Island Bridge	3,000,000
Construction of approaches to Manhattan and Blackwell's Island Bridges	4,700,000
Hudson Memorial Bridge	3,000,000
City's share of viaducts across Grand Central yard	600,000
Repaving streets, all boroughs	8,000,000
Relief sewers	3,000,000
Waterfront improvements	12,000,000
School buildings and sites	20,000,000
Police and fire engine houses	4,000,000
Brooklyn Municipal Building	1,500,000
Bellevue Hospital	1,600,000
Park construction, all boroughs	1,500,000
Metropolitan Museum	1,500,000
Zoological Society	250,000
Department of Health	2,000,000
Department of Charities	500,000
Department of Correction	250,000
Extension of Riverside drive to Harlem River	5,000,000
Land required for Riverside Drive extension	1,500,000
Park between Riverside Drive and the Hudson River	3,500,000
Owl's Head Park	2,000,000
Seaside Park at Rockaway	1,500,000
Street and Park Opening fund	15,000,000
Assessment bonds to meet cost of local improvements above receipts from assessments	5,000,000
Completion of Public Library Building	3,000,000
Margin to be allowed within debt limit	10,000,000
Total	$199,650,000

AROUND SYRACUSE.

SYRACUSE, N. Y., April 20.—The continued cold weather and the demand of nearly all kinds of laborers in the building trades for higher wages, has complicated the situation somewhat in this vicinity. C. J. Sullivan discharged his cement side walk finishers who demanded higher pay and would not sign an agreement for the whole season and sent west and got men to fill their places. Mr. Sullivan's finishers last year were paid $4.00 a day and their policy in letting their helpers do all the work was not satisfactory to Mr. Sullivan. This year they asked for $24.00 a week, straight time, and would give no assurance that they would not strike for still higher wages when Mr. Sullivan was in the midst of a big job. The result was that their places have been filled. A new wage schedule put into effect by the Carpenters' District Council gives 800 carpenters of Syracuse an increase of five cents an hour, making the present rate $4.00 a day.

At Utica, the troubles are as bad as they are in Syracuse. The helpers demand an increase in wages of five cents a bundle. They have been receiving twenty cents. The Master Masons' Association has appointed a committee to meet the men and it is hoped that a compromise can be reached. The only thing that prevents an enormous amount of building is the high price of material and labor as more houses for rent are in great demand.

C. J. Sullivan is now turning out 175 building blocks a day with his Ideal machine and he has more side walk work than he can do in two months.

He has started building a house at the corner of Niagara and Oswego streets, 62 by 27 feet, which will be concrete to the top of the ground and will have five courses of blocks above the ground. He is negotiating now for building five houses of these blocks.

W. K. Squier, manager of the Paragon Plaster Co., says that the Niagara Gypsum Co., of Wheatville, N. Y., of which he is vice-president, is making fine progress in the erection of its new plant. In two weeks the plant will be under cover and the materials and machinery are coming promptly. The company has been mining gypsum for three months and will have a large stock to work on as soon as the plant is completed. The Niagara company has a lease of the mining rights of 500 acres and expects to have one of the most up-to-date plants in the country. John A. Kling is president, W. K. Squier is vice-president and M. A. Reeb is secretary and treasurer.

The Paragon Plaster Co. will build a new warehouse of its own concrete two-piece Denver block. It will be two stories high and 250 feet long, situated between the railroad tracks of the New York Central and the D. L. & W. Mr. Squier, manager of the company, reports that the plaster business is good and somewhat ahead of any other year. The company is making large quantities of sand lime brick and concrete blocks. The Homeopathic hospital building of these sand lime bricks has been completed and is an attractive building. The same is true of the Flagg storehouse, the walls of which were built of the same material.

The old Alvord Lime Mills at Catawba and North State streets have been sold to the Taylor & Crate Co., dealers in hardwood lumber.

It is probable that a number of Syracuse streets will be paved with macadam where the property owners can not afford brick or asphalt. On all of the macadam highways contracted for in Onondaga county this year, trap rock is called for.

Ivan Krueger, engineer for the Consolidated Engineering and Construction Co., which is building the Syracuse University Stadium, is a relative by marriage of Oom Paul Kruger, famed as the head of the Transvaal. The Syracuse man's grandfather and Oom Paul Kruger married sisters. The fact that there is a similiarity of names has no connection with the relationship, as Mr. Krueger is a Swede. Work is progressing on the Stadium and a number of new machines have arrived, including two large concrete machines, three smaller machines and a Smith machine. There is a steel track seventy-five feet high lifting loaded cars of sand from a narrow gauge railway in the bottom of the Stadium to a track above on which cars are run to the western end of the campus where the dirt is used in filling up. An underground passage will be dug to connect the new gymnasium with the Stadium. The Consolidated Engineering & Construction Co. also has the contract for a new gymnasium. Hundreds of people are watching this remarkable use of concrete in the big stadium in which 12,000 barrels of cement will be used.

George P. Price, of Lyons, N. Y., is trying to project a gigantic plan for an automobile elevated roadway from New York to Buffalo. The roadway is to be built within walls of concrete thirty feet high and one hundred feet wide and throughout the whole course, there will be arches over public roadways. Many of these arches will be built so as to serve as storehouses and offices. Within the body of the structure the place is to lay conduits for water and electric wires.

Work has been resumed at the Corrigan & Mac Kinney quarry, four miles east of Gouverneur. It is expected that 1,000 tons of crushed stone will be taken out and shipped to the smelting works at Charlotte.

AROUND BUFFALO.

BUFFALO, April 17.—Francis A. Dunn has been awarded $629.00 by Sidney W. Petrie, of Buffalo, as special master on a claim in a libel filed against 700 tons of cement blocks. The Cement Products Co., of Rochester, which went into bankruptcy several months ago, owned the property. The libelant is the owner of two canal boats, which were chartered to transport the cement blocks from Rochester to Knowlesville, N. Y., by way of the Erie Canal to be used in building trolley stations. The contract went into effect November 15, 1906, and according to its provisions the company was to do the loading and unloading of the blocks at its own expense. Mr. Dunn made one trip with his boat carrying 350 tons to their destination. Then the company got into financial difficulties. Mr. Dunn, therefore, unloaded the blocks at his own expense, afterwards filing a libel against them. He claimed $300.00 for transportation charges, $320.00 for demurrage and $163.00 for the cost of unloading. The claim was contested by the receiver of the Cement Products Co. on the grounds that the demurrage and unloading charges were excessive. According to Mr. Petrie, who was appointed special master in the case, the libelant was entitled to $300.00 for transportation, $200.00 for demurrage and $129.00 for unloading. While this suit was pending, the cement blocks were sold as a part of the assets of the bankrupt concern for $1,199.59. Out of this fund, the libelant will get his money, if the award made by the special master is confirmed by Judge Hazel of Buffalo.

A car house, which will be of concrete and brick construction, will be built by the International Railway Co., on Broadway, Buffalo. The car house will be the largest in this city. It will be 162 feet wide and 565 feet long. Mosier & Summers are the builders. The structure will be ready for use September 1.

The James Alexander Co. will erect a large cold storage building in Montreal at a cost of $400,000.00. The storage plant will be built entirely of reinforced concrete and will be as fireproof as modern methods can make it. The structure will have a capacity of 300,000 boxes of cheese and 75,000 packages of butter.

The American Gypsum Co. has a large force of men grading for a mile track for a switch from the West Shore Railroad to the company's lines at Akron, N. Y. The first shovelful of earth was turned by an officer of the company less than six months ago where there is now an immense shaft from which many tons of gypsum have been taken and are now awaiting shipment.

An elevator with a capacity of 2,000,000 bushels of grain is being erected by the Canadian Government at Port Colburne, Ont. The structure will be of concrete with a steel superstructure and will cost about $1,000,000.00. The contractors are Peter Lyal & Son, of Montreal, and the consulting engineers are J. A. Jamieson, of Montreal, and an engineer of the Dominion Government.

Richard L. Humphrey, president of the National Cement Association, and Charles D. Watson, secretary of the same organization, were in Buffalo recently with a view to arranging for the holding of the convention of their association in this city in 1908. The convention would bring from 1,000 to 2,000 concrete construction men to Buffalo. If a large building can be secured in which to hold their meetings, it is said, Buffalo can land the convention.

J. C. Ritzaur is building a large cement block factory at the foot of South Clinton Street, across the road from the Olean Brewing Co.'s new plant, at Olean, N. Y., which, when finished, will employ several men and have a capacity of from 600 to 800 blocks a day. The main building is now nearly finished and it is 32 x 96 feet. Two other buildings will be erected, a storehouse 32 x 16 and a sand shed 18 x 16. The buildings are to be of frame construction. Mr. Ritzaur will later install a machine mixer. He has been engaged for some time in making the blocks, but now proposes to go into it on a large scale.

The Allegheny Facing Brick and Concrete Co., capital stock $40,000.00, has leased the Sullivan sand bank at Belmont, N. Y., and will erect a large brick factory at a cost of $40,000.00. The new plant will employ twenty men or more the year round.

According to ante-mortem instructions, the body of Theodore G. Hullett, of Niagara Falls, who died recently, was buried in a block of cement. Mr. Hullett had constructed a coffin for himself some years ago. Three inches of cement was first placed in the huge box-like affair and allowed to harden. The body, which has been embalmed, was laid upon this foundation and the box was then filled up with cement until the body was three inches below the surface.

E. A. Fling has purchased thirty acres of land from Erastus Smith on Prospect Street, at Stella, N. Y. Mr. Fling will erect a large cement block plant on this land with the expectation that the ground will furnish a large portion of the materials used in this business.

The Cowell Portland Cement Co. has been incorporated in San Francisco with a capital stock of $1,500,000.00 by W. H. George, E. V. Cowell, S. H. Cowell, I. M. Cowell and H. F. Cowell. The new company was organized to own and operate the new cement mill which is to be erected at once at Concord, Cal., as an offshoot of the Henry Cowell Lime and Cement Co., of San Francisco.

CLEVELAND AND NORTHERN OHIO.

CLEVELAND, April 10.—The spring building rush is on and an unprecedented amount of concrete construction is under way. This year will surely be the banner year for building in Cleveland. The records at the building inspector's office indicate that a vast amount of construction of all kinds is under way. For the month of March the value of the building permits was $600,000.00 higher than for a similar period a year ago, the total being $1,898,702.00. 776 permits were issued. The total value of the building permits issued this year to April, reaches $3,280,720.00, which is the high water mark for a similar period in the city's history.

A score of big concrete construction jobs is now on in this city and this form of building is rapidly gaining in favor among manufacturers and builders. The biggest contract of the kind ever attempted in Cleveland is now being finished up by the Osborn Engineering Co. and the National Concrete Fireproofing Co., which is erecting a village of thirty concrete buildings for the Glidden Varnish Co., whose plant was destroyed by fire six months ago. Twenty-seven of the buildings have been finished and three others are being worked on at the present time. The plant is costing several hundred thousand dollars but is fire proof in every particular. Many of the buildings are one story structures where entire departments of the big plant are housed. Two larger buildings serve as offices.

The Cleveland Reinforced Concrete Co. has completed a four-story concrete stable for the Cleveland Transfer Co. on Oregon Avenue at a cost of about $100,000.00. It is faced with brick and has concrete floors and columns.

A concrete office and factory building is being erected for the Cleveland Punch & Shear Works in conjunction with the concern's plant on St. Clair Avenue. The front section will be used for office purposes and the rear for manufacturing. The contract calls for the expenditure of about $35,000.00. Still another building is to be erected, to be of steel construction with concrete floors. The work is being done by the Cleveland Concrete Steel Construction Co. and the Courtney Engineering Co., which has offices in the American Trust building.

M. A. Bradley is building another power block on Academy street, which will cost in the neighborhood of $100,000.00. The contract has been let to Collister & Moore. Bradley has just finished a large concrete and brick power block on Seneca street which cost $100,000.00 and which was built by the same contractors. It is five stories high and 60x120 feet in size.

The Concrete Steel Construction Co. is busy erecting a new concrete storage house for the Grasselli Chemical Co. out on Independence Road. The building is 50 x 300 feet in size and will cost about $50,000.00. Last fall a big storage house on the same site burned and much damage was done by the blazing of dangerous chemicals which are manufactured there. It was then determined to erect a fireproof warehouse and concrete was promptly chosen as the best material to be used.

The Excelsior Brewing Co. is erecting a new building and the specifications provide for concrete floors for the structure. St. Luke's hospital is well under way. The contract is held by the National Concrete Fireproofing Co. and calls for all floors to be of concrete. F. W. Striebinger is the architect in charge. The building will cost $100,000.00.

A mammoth apartment house is being built for the Euclid Realty Co., on Euclid Avenue near E. 69th street and the columns and floors are all of concrete. The work is in charge of the Kaufman Architectural Co.

The Carey Construction Co. has commenced work on the rebuilding of the Ohio Ceramic Engineering Co.'s plant and is also hard at work on the upper stories of St. Stanislaus parish school. Both buildings are of concrete. The Carey Co. has closed a contract to put a fireproof concrete roof on the plant of the Lake Erie Iron Co.'s factory on Addison road.

The Otis Steel Co. is building a new addition, which is to be of steel frame with concrete floors and brick walls. The National Fireproofing Co. has the contract for the work. A small concrete and cement block office building is being erected for the Cleveland City Forge Co.

The Carey Construction Co. has commenced work on one of the biggest concrete dock projects ever attempted in Cleveland. The dock is to be built in sections, the first to be 1,000 feet in length and to be used by the Cleveland Furnace Co., which has recently purchased extensive property interests in the upper river bed where it is proposed to erect mammoth blast furnaces.

The dock will be built of piles which will have a concrete top with the concrete running fourteen inches below the water line. The first 1,000 feet will cost about $27,000.00. It is expected that five miles of concrete docks will be built in the new section of the river which was recently opened up for factory purposes. The river will be dredged to a depth of thirty-five feet so that the largest lake barges may be admitted. The work is being done under the Carey Co.'s own system of concrete construction.

From present indications there will be no labor troubles of magnitude in Cleveland this spring. The carpenters say they are satisfied with conditions and the masons and bricklayers are in the same amiable mood. No trouble is looked for with the structural iron workers.

The Independent Stone Co., of Cleveland, has been sued for $10,000.00 by the Cleveland Hydraulic Pressed Brick Co., through its manager, W. H. Hunt, who claims damages to his plant by floods caused by the filling in of the bed of a creek with quarry strippings and sand from a stone sawing mill. The brick plant is located near to a creek in South Park near Cleveland. About a half mile above it is the stone mill of the stone company and still farther away are two quarries. Late in March the creek filled up and swamped the brick plant with a deluge of water and mud. Mr. Hunt says that if the stone company had not dumped its strippings into the river, the bed of it would not have been raised five or six feet and that it would have carried the water away all right. It took 100 men several days to clean up the brick plant from the debris washed over it by the flood.

Albert D. Klein, formerly a secretary of the builders' exchange at Baltimore, has been engaged by the Cleveland Hydraulic Pressed Brick Co. as a city representative. J. D. Sharp, formerly with a brick concern at Wellsville, O., has been made general sales agent. Morse Fellers, who held that position until March 15, has gone west to manage a mine. The office of the pressed brick plant at Findlay, O., has been merged with the Cleveland office and W. H. Hunt will control both of them.

Cleveland paving brick manufacturers, who have been accused of having a combine and who were "investigated" by a grand jury during March, have again been acquitted, the grand jury failing to find grounds for the accusation.

A well known Cleveland contracting company has been awarded the contract for a big concrete job in California. The Osborn Engineering Co., of this city, has been engaged to erect a large cement plant for the Henry Cowell Lime & Cement Co., at Concord, Cal. The buildings will be of steel and concrete construction covering 1,500 by 400 feet and costing $750,000.00. The general contract for the work was secured by the Hunkin Bros. Construction Co.

A movement of interest to building contractors and supply dealers is that of the Ohio Builders' Supply Association, the executive committee of which will meet in Cleveland this month to consider plans for the improving of the state laws relating to liens so that better protection will be afforded dealers in building materials. Representatives from other organizations have been invited to attend the meeting.

One of the largest concrete buildings now under way in Cleveland is a new storage warehouse for the Sheriff Street Market & Storage Co. The building is being erected immediately in the rear of its present building and will face on E. 6th street. The total capacity of the new warehouses will be 1,000,000 cubic feet, which will bring the company's total area to 1,500,000 cubic feet. This is said to be one of the largest capacities of any individual plant in the world. The new warehouse is to be six stories in height and of fireproof concrete construction. There will not be a stick of wood in the whole structure, which is to cost, including machinery, some $200,000.00.

A deed of assignment has been filed by the American Clay & Fertilizer Co., a Cleveland concern, which supplied clay to potteries throughout Ohio. J. J. Clark, of Canton, has been made assignee. The capital of the company was $50,000.00.

During the March floods many of the potteries along the Ohio river and throughout the entire state were badly damaged. Thousands of dollars worth of ware and material were ruined. Hundreds of homes occupied by the pottery workers were submerged by water, causing great suffering.

Brick paving is well under way in Cleveland. Some fifty miles of streets are planned to be paved this year. City inspectors say that the brick being delivered this year is the best in years. Work is at present progressing on the setting of curb.

W. S. Lougee, formerly chief assistant, has been appointed city building inspector at a salary of $4,000.00. Edward Horner, formerly chief draughtsman in the city engineer's office, has been made chief assistant; Myron Vorce, formerly inspector, has become the head of his own engineering company, with offices in this city.

A new three-story commission house is to be built on Broadway adjoining the Friendly Inn. It will be largely of concrete with brick facings. W. S. Watts is architect and the building is for the Economy Realty Co. W. W. Hodges, architect, has planned a new $50,000.00 parochial school for St. Augustine parish. Concrete floors, pillars and fireproofing are to be used.

Cleveland's city solicitor has announced that it is illegal for the city to place iron voting booths in the roadways. The board of elections is now considering the advisibility of purchasing small tracts of ground in the various precincts and erecting permanent buildings. To that end the city architect has been directed to prepare plans for a permanent cement block voting booth and a local cement company will erect one as a sample of its work.

One of the biggest projects which has not been definitely evolved as yet is the erection of a five-story concrete building for the White Sewing Machine Co. in connection with the St. Clair avenue plant of the White Automobile Co. The new building will be ninety by two hundred feet in size and will cost upward of $100,000.00. Architects are busy working on the plans of the structure but no contracts have been let as yet.

The new Perry-Payne power block on Oregon avenue, which is of concrete and faced with brick, has been entirely finished by the Reinforced Concrete Construction Co. at a cost of over $100,000.00. It is six stories high and 80x150 feet in size. A remarkable test of the floors was made when 118,000 pounds was placed on a section fourteen feet by twenty feet. The result showed a deflection of less than one-fourth of an inch.

Navigation has opened on the great lakes and several of the boats of the Kelley Island Lime & Transport Co. have already brought cargoes of lime to Cleveland. Lime has been advanced in price about eight per cent to the trade in this locality, but is in great demand. The car shortage is still causing the Kelley Island company much inconvenience.

IN THE WINDY CITY.

CHICAGO, April 18.—The spring has seen activities in the building line renewed with the vigor of last year. Permits for over a thousand buildings to be erected at an estimated cost of nearly $6,000,000.00 were issued by the Building Commissioner last month. This is a good increase over the corresponding month of last year. One notable feature of these permits is the fact that so many of them are dwellings, principally flat buildings. Some of the largest and most imposing office buildings this city has are now rapidly nearing completion. Within what is known as the loop district, an almost complete change or rather an almost new city has sprung up in the past few years. The visitor who comes to Chicago now is impressed by the remarkable change that has taken place both in the number of new and large buildings as well as the architectural advances made in the buildings constructed in the past few years.

Chas. Allis, president of the Chicago Belting Co., is to build for that company a reinforced concrete building on Green street, near Randolph street. It is to be a three-story building 117x145 feet and to cost $100,000.00.

A building to be of reinforced concrete construction is to be built for the Marshall-Huschart Machinery Co., on Jefferson street. The building is to be eight stories high 80x133 feet and to cost $150,000.00. The architect is F. M. Barton.

One of the largest and most important works of construction now contemplated is the training station to be built at Lake Bluff, Ill., for the Navy Department of the Government. The architect, Jarvis Hunt, of this city, is receiving bids for the work to be let by general contract. The station will consist of thirty buildings to be of fireproof, reinforced concrete construction; the exterior to be of stone, terra cotta and brick. The estimated cost is about $1,900,000.00. Among the large buildings are a gymnasium 387x120 feet, an administration building 225x82 feet, and a drill hall 400x92 feet. The architect will issue the plans and specifications to builders.

One of the first concrete coal docks to be erected at the head of the lakes is to be built by the Philadelphia and Reading Coal Co., at Superior, Wis. The dock when completed will cost $200,000.00, and is one of the most important constructions in this line in the vicinity of Superior.

The Corn Exchange Bank following the lead of the other foremost banks in Chicago, will erect a building to be used for a bank and office building at the corner of Adams and LaSalle streets. The building is to be sixteen stories and cost $200,000.00. Work of razing the buildings now on the property will be started May 1, so that the construction of the new bank building may commence as soon as possible.

The Marquette Portland Cement Co. have moved their offices from 1513 Marquette Building to 1524 of the same building and have considerable more space.

The Universal Portland Cement Co. will move May 1 from the Rookery Building, to the fourteenth floor of the Commercial National Bank Building.

The Elk Cement and Lime Co., of Petoskey, Mich., are building a large warehouse at Milwaukee, Wis., as a large amount of their output is distributed in Wisconsin and is transported across the lake by boat. By having their warehouse at Milwaukee they will be able to ship from this point more promptly as they will carry a large stock on hand.

It is reported that a cement mill with a capacity of 2,000 barrels is to be constructed at Harvey, Ia. It is to cost $1,000,000.00.

Through the middle of this busy city is a vein of limestone running from the northwest to the southeast, which is near enough to the surface to be worked and quarried. This vein is of the highest quality stone, suitable for lime burning and crushed stone for macadam and concrete purposes. Three crushing plants, each with lime kilns, are busy all the time and the product is easily disposed of. These plants, when erected, were away out on the prairies; now they are in the heart of the residence and business sections. To the north and farthest west, three miles from the lake at Grand and Campbell avenues, the plant of the Artesian Lime and Stone Co. is located. They operate two quarries and are now erecting one of the largest crushing plants in this vicinity at Summit, Ill. About two miles from the lake at Nineteenth and Lincoln streets, the plant of the Chicago Union Lime Works is located. This quarry now has an opening at a depth of 280 feet. An elevator is used to hoist the stone to the crushers. This company is also erecting a crushing plant at Summit, Ill. The plant of the Stearns Lime and Stone Co. is located at Twenty-Seventh and Halsted streets. They do a large business in lime and crushed stone.

Adam Grath of Joliet, Ill., has sold his crushing plant and property to the Michigan Central Railway Co. The road will continue to run the plant to furnish ballast for its roadbed.

THE TWIN CITIES.

MINNEAPOLIS, MINN., April 13.—The city of Minneapolis is threatened with a general strike because the carpenters can not get their demands for 45 cents an hour. The builders have made an offer of 42½ cents from July 1, but this has been refused. The union threatens a general strike, and the master builders are content to have it, if it must be. They then propose once that a general strike is actually called, to declare open shop the rule, and no deals with unions under any circumstances. The contractors have gotten along fairly well with their men for some time, but they do not relish the interferences which have been their lot from time to time.

The building season is consequently holding off in Minneapolis, there being a number of good-sized jobs on which the owners are delaying and some have postponed things for a year to await a better season, and not take the chances of having a large building on their hands, part way constructed.

The spring market for brick is fairly good, though not equal to a year ago, when there was an eager demand for everything that answered the appearance of brick. Now the demand is fair, but brick men feel that they are not getting their share in the advance which affects everything else. Prices range from $6.00 to $8.00, according to quality.

The railroads, which have been storing cement in the dock warehouses at Duluth all winter, have notified cement men that they must withdraw it by May 1, or pay storage from that date.

The National Stone Manufacturing Co., of Minneapolis, is doing a good business in its cast stone, granolite, as they call it, and is selling it through various points of the Northwest, as well as numerous sales in the Twin Cities.

The outlook for the cement business for the season is good. The public is becoming familiar with

what may be expected of cement construction in various forms, and does not expect the impossible so much. The cement block trade is gaining in confidence as it advances in standing. Blocks are being better made than formerly, as manufacturers become more experienced and proficient.

A. F. Wasielewski, who has been superintendent for the Minnesota Ceramic Co., whose plant is at Coon Creek, near Fridley, Minn., has retired from that position and has arranged to resume his former business as a general contractor and builder. Mr. Wasielewski is the builder of a number of large churches at different points throughout Minnesota and adjoining states.

The Minneapolis Sand-Lime Brick Co. has filed articles of incorporation with a capitalization of $100,000.00 and has bought a tract of land in Northeast Minneapolis, for the establishment of its plant. The incorporators are: Theo. Dunn, Samuel N. Braden, E. P. Shaken, George H. Markham and R. L. Hall.

T. S. Willcox, who has been a member of the stone contracting firm of C. W. Babcock & Co., of Kasota, Minn., for a number of years, has retired, and has gone to Tacoma, Wash., where he has made new connections. G. O. Jamison, who has been with Winston Bros. & Dear, railroad contractors, succeeds Mr. Willcox as superintendent of the stone business.

The Brayton Bros. Co., of Minneapolis, have been incorporated to do concrete construction and engineering work, the capitalization being $500,000.00.

Bertrand & Chamberlin, the Minneapolis architects, have recently issued a booklet on reinforced concrete and other construction, showing some striking illustrations of their work in this line. This firm was associated with the first real contracts for reinforced concrete construction in the Northwest.

A bill has been introduced in the Minnesota legislature to regulate the manufacture of concrete blocks, along the lines suggested by Nels Erickson, of the Medium Block Machine Co., Minneapolis. The bill is introduced by Swan Nelson, of Minneapolis, and provides for a license fee of $25.00. It fixes the proportions to be used in making blocks, five parts coarse sand to one of Portland cement or two parts gravel, three parts sand and one of cement. Materials must be mixed by a machine, and all machines to be used in making blocks are to be passed upon and accepted by a state inspector, to be appointed for the purpose. All machines must be able to handle a wet process capable of stripping immediately, and to use a gliding movement in stripping, except on ornamental facing work. Blocks must sustain a compression of one thousand pounds before going into a building. The bill will unquestionably arouse much opposition from blockmakers of the state, as in some points it hits them hard.

The Belt Line Brick Co., of Minneapolis, has just been incorporated with a capital stock of $150,000.00. Those interested include Henry E. Fletcher, Wallace B. Chanler and Charles H. Robinson. They will install a sand-lime brick plant on the Belt Line in Northeast Minneapolis.

Builders of Crookston, Minn., have just organized a Builders Exchange there, making the sixth exchange in Minnesota. J. E. Morrisey is president.

MEMPHIS AND THE SOUTHWEST.

MEMPHIS, TENN., April 19.—The firms here handling rock products, slate, lime and cement have had a gratifying business this spring. Building operations have been on a large scale in Memphis and the actual volume of permits has exceeded that of the spring months of last year.

The Memphis Brick Supply Co., which was recently entered in business here, is handling some of the product of the Tennessee Brick Co. It also has established agencies for terra cotta, cement, etc.

The Block Mercantile Co. will erect a seven-story building here at the corner of N. Main and Jefferson Avenue where the Equitable Life Assurance office building was recently damaged by fire. Architects G. M. Shaw and Pfeil are preparing the plans.

The new plant of the Laurel Brick and Tile Co., at Laurel, Miss., has begun operations. It has a daily capacity of 40,000 and employs twenty-five men. S. M. Jones is president of the company.

The Minter City Tile Co., of Minter City, LeFlore County, Miss., has been incorporated with a capital stock of $18,000.00. Ben L. Jones, D. S. Jones, D. T. Mitchell and F. R. Streator are among the incorporators.

Work is in progress in Memphis on the ten-story addition to the Peabody Hotel. The James A. McKim Co., of Chicago, has the general contract, which has been sublet to the Wesley Construction Co., of St. Louis. Three hundred rooms will be added. The A. E. Niemeyer Mantel and Grate Co., of Memphis, has the contract for the tile work. The work includes tile floors in 134 bath rooms, dining room and grill rooms and it is said will be one of the largest tile jobs in the South when completed.

The Windsor Mantle and Tile Co. has been recently organized at St. Joseph, Mo. The company has a capital stock of $4,000.00. Its offices are at 1631 Frederick Avenue. The company will deal in earthen products, tiles, mantels, etc.

H. H. Wooldridge, of Wooldridge, Mo., and the Jefferson City Lime Co., have closed a contract whereby the lime company gets control of the land underlaid with lime rock and which is located within the corporate limits of Wooldridge. It is the intention of the campany to put in the most modern lime works, and the capacity will be 200 barrels per day. Thirty men will be employed.

F. E. Tyler, president and general manager of the Dewey Portland Cement Co., at Dewey, Kan., has just returned from Dewey to the general offices at Coffeyville, Kan., and reports that he found thirty cars of material at Dewey, including ten cars of structural steel, and that work will be pushed at the new plant there.

The Grand Falls Supply Co., of Oklahoma City, has been incorporated with a capital stock of $2,000,000.00. The incorporators are: G. V. Pattison, H. W. Pentecost, of Guthrie; Chas. N. Brown, of St. Louis.

The Oklahoma Vitrified and Pressed Brick Co., of Guthrie, has been organized and chartered at Guthrie. It is composed largely of Oklahoma City capitalists. It is an amalgamation of several brick companies of the two territories. It will establish at some place where the proper shale can be found a plant for the manufacture of vitrified brick.

The Muskogee Vitrified Brick Co., of Muskogee, I. T., because of the large amount of building in that city, has been compelled to order machinery to double its present output in order to supply the demand. W. R. Whitesides is manager of the company.

The Beardslee Construction Co., large manufacturers of cement stone and brick in Nebraska, have been making extensive improvements at their plant, Nineteenth and Vine Streets. C. O. Beardslee is now president of the company. One machine installed for the manufacture of faced brick, has a capacity of 22,000 brick a day.

The factory of the Fort Worth Sand and Glass Co., at Ft. Worth, Texas, is progressing rapidly and it is expected that it will be completed within thirty days.

The Southern Fullers Earth Co., of Somerville, Burleson County, Texas, has been incorporated with a capital stock of $100,000.00, by S. N. Mayfield and J. H. Barwise, of Fort Worth.

NASHVILLE AND THE SOUTHEAST.

NASHVILLE, TENN., April 18.—Some big building undertakings are on at Nashville. McKendree Methodist church, several apartment houses and many residences and business houses have been planned. Trade is active and the supply houses in brick, concrete, slate, lime, cement and specialties are having an excellent business.

The Wright Lime and Cement Co., at 148 Second Avenue, South, managed by John A. Wright, reports the spring business in Nashville to be good in spite of weather that has not been altogether favorable. The firm handles cement and all materials for masons. They manufacture lime at their own plant, two miles out on the Lebanon pike. Most of their shipments are received by rail.

T. A. Brown & Co., who formerly did a lime and cement supply business here, have retired from this business and gone into contracting work exclusively.

W. N. McDonald, formerly manager of the Granitoid Construction Co. here, has organized the Nashville Concrete Co., and begun the erection of a concrete block plant in Northwest Nashville, near the Gray and Dudley foundry. The company will manufacture everything that goes with the concrete building business.

Bledsoe County, Tenn., has taken action in regard to the building of a $15,000.00 courthouse to be made of concrete blocks and with concrete wall as backing. The plans were drawn by Chamberlain & Co., of Birmingham, Ala., and the contract was let to the Falls City Construction Co., of Louisville, Ky.

Pitman & Wamble have recently put in a sand dredger on the Tennessee river to be used in connection with their Chattanooga business.

The Chattanooga Sand and Supply Co., recently launched at Chattanooga by John Womble, Henry Pitman and others, is doing an active business with the building trades and agencies of the Southeast.

The Dale Sand Co., of Chattanooga, Tenn., has installed a large apparatus to be used in unloading their product. The machinery is the best of its kind ever placed along the Tennessee.

The Hamilton Brick Co. has started up operations at Chattanooga. It has new buildings and equipment and when running at full capacity can make 50,000 bricks a day. The plant is located on the river near East Chattanooga. The capital stock is $25,000.00. A. C. Foust is resident; J. S. Lawson, vice president and superintendent; and A. H. Rogers, secretary and treasurer.

The Tennessee Brick and Manufacturing Co. has been recently launched at Chattanooga, to manufacture building brick, terra cotta and tile. A site has been acquired on the Tennessee river north of Citice. The gentlemen identified with this company are: C. E. James, R. B. Henderson, M. B. Ochs, Wm. Parks and M. H. Clift.

THE WEST COAST.

SAN FRANCISCO, CAL., April 10.—After about four months of almost continuous rains, the month of April ushered in a period of drier weather, which has caused marked improvement in the local building situation. Comparatively little work was accomplished on stone and brick buildings during first three months of the year, but contractors on reinforced concrete buildings were enabled to progress slowly and steadily throughout the rainy season. The work of placing the forms and mixing and pouring concrete was retarded but not stopped. On a number of reinforced concrete buildings, the work was carried on even at night in the rain by extra shifts of men. A great deal of night construction work is being done at present by reinforced concrete engineers in order to make up for lost time and complete the buildings within the periods required by the contracts.

Concrete materials are in fair supply, with the exception of crushed rock, of which this market is almost bare. Much granite and other rock is taken from the ruins and crushed by electrically driven rock crushers on the spot for use in reinforced concrete construction.

Gravel from river beds is being used in large quantities in place of the crushed rock. High prices are paid for all this material that can be secured. Good sand is also in demand in quantities far exceeding the supply that has been available during the car congestion of the past few months.

Crushed brick is also being used in considerable quantities in concrete for the foundations of new buildings. Several contractors, who are wrecking burned buildings, such as the Palace Hotel, have installed rock crushers and are selling crushed brick to all who will buy. The scarcity of lime is a serious feature of the local building situation. The erection of additional plants will bring relief in time, but the coast demand is great and shipments here are comparatively small.

Good arrivals of foreign cement have continued right up to date, both in San Francisco and other ports, where it is needed on this Coast. Prices are a little higher, owing to the consumptive demand occasioned by the near approach of the dry season with its expected building boom. Good foreign cement is sold at from $3.00 to $4.00 a barrel ex wharf and as high as $4.25 to $4.50 ex warehouse. The total importations of cement at San Francisco for March were 112,300 barrels.

Domestic cement manufactured in California is in small supply at $2.75. The output of the local plants has not been increased much and cars for shipment the fifty miles or less to the city are hard to get and slow to move. So the foreign supply is still depended upon largely by those who wish to use a high grade cement on new buildings. Several vessels are now in the harbor with European cement and many more are to follow. In spite of the numerous cargoes arriving and on the way dealers and contractors say that cement prices will advance this summer and

fall when the daily consumption of the city will be heavy, for reinforced concrete buildings, sidewalks and foundations.

The San Francisco Board of Supervisors recently repealed the provision of the new building laws, passed since the fire, which limited the height of buildings to one and one-half times the width of the abutting street. This provision, which was designed to force property owners to agree to permit some of the streets in the business district to be widened as a precaution against the spread of fires, failed of its purpose and no widening has been done. It, however, acted as a damper upon the operations of many who were planning large buildings and many plans were altered so as to provide for Class B and C structures of from four to eight stories instead of twelve and sixteen-story Class A buildings. The limit has been taken entirely off Class A buildings, and already announcements have been made of the proposed erection of several buildings of twelve stories or more in height.

Rudolph Spreckels has announced the early erection of a thirteen-story building by the First National Bank on the site of the old Masonic Temple on the Northwest corner of Montgomery and Post Streets. It will be a Class A office building, with stores below, and up-to-date in every respect. Massive bank vaults and safety deposit boxes will be installed.

Night shifts are being worked on the new reinforced concrete building on the northeast corner of Drumm and California Streets by the Woodruff Co. The contractors are also working a night force on the reinforced concrete foundations of the new twelve-story Alaska Commercial Building on the Northeast corner of California and Sansome Streets. This will be one of the finest office buildings in the city.

Frank B. Gilbreth is now making better progress on the massive eight-story reinforced concrete building on the northwest corner of Drumm and California Streets. Two stories are finished and forms are up for the third.

Good progress has been made on the Pacific Building, a large reinforced concrete structure on the Southwest corner of Market and Fourth Streets, as the work goes on night and day. The third story is finished.

The Humboldt Bank Building, the tallest building erected since the fire, has fourteen stories besides the dome and a basement. The exterior walls are almost completed. The sidewalks and the south front are of reinforced concrete, although the big light court on the east side is finished in white enamel brick. The main front, on Market Street, has a carved sandstone front for the first three stories and terra cotta finish for the upper floors.

The Commercial Pacific Cable Co. will rebuild the cable "hut" near the ocean beach in San Francisco with reinforced concrete, as that is considered the most durable material. The present brick hut where the land end of the cable to the Orient via Honolulu, terminates, was shattered by the earthquake last April. The new structure, which will house the delicate instruments for handling cablegrams and shelter the cable operators, will be provided with a vault for the safe-keeping of the instruments and materials in case of emergency. When the Hobart Building on Market Street, in which were duplicate cable instruments worth $30,000.00, was burned in the great fire with the operating rooms of the Postal Telegraph and Cable Co., the cable officials would not leave the cable apparatus in the vaults of that structure. They carried them out to the beach where they remained undamaged.

The Holland Sandstone Brick Co. is running its improved plant at Antioch, Cal., and turning out about 35,000 sand-lime brick daily. The demand is good in competition with common red brick at $12.50 a thousand and upwards. These brick have been used for facing portions of new buildings in San Francisco as well as for the entire walls of buildings in other cities.

The Board of Supervisors will appropriate money for the construction of fifty new underground cemented fire cisterns at street intersections in San Francisco. As an auxiliary water supply in case of the failure of the water pressure from breakage of mains or any other cause these cisterns would be of inestimable value.

The new county bridge that is to be built across the Feather River at Oroville, Cal., will cost $70,000.00 if constructed of concrete, according to estimates of a local bridge engineer. He estimates the cost of steel bridge at the same site $100,000.00 and of stone structure $125,000.00.

There is danger that 6,000 union workmen may soon be ordered to stop work on buildings in Tacoma, Wash., as a result of the controversy between the master plumbers and the journeymen in the plumbing trade. The Building Trades Assembly with the backing of the Citizens Alliance, is opposing the forces of union labor.

Building construction is increasing in activity in Portland, Ore. Reinforced concrete work is opening up there. The city authorities have been considering the addition of a section of the local building laws authorizing the erection of reinforced concrete buildings. There has been much delay over the height limitation. Some architects held out for fifteen stories as the maximum height for such structures, while the Health and Police Committee, to which the question was referred, favored limiting the height to 102 feet, or twelve stories.

On the Couch eight-story reinforced concrete building, Fourth Street, between Washington and Stark Streets, the brick masons are facing the front with pressed brick and terra cotta. They have already reached the seventh story. Concrete workers are losing no time on the ten-story Corbett Building at Fifth and Morrison Streets. The brick masons have been retarded by the temporary scarcity of lime. The massive concrete basement walls of the Commercial Club Building at Fifth and Oak Streets, are finished and little delay is expected in the erection of this eight-story building, which will cover a quarter of a block.

LOUISVILLE, KY.

LOUISVILLE, KY., April 20.—In this city conditions are practically the same as those covering the entire country. The cement men here are still wrestling with the now famous car shortage proposition, but at the same time are greatly overcoming this obstacle. In the line of concrete work it may be said that the best results have been attained in construction and the work done so far has been highly satisfactory. The foremost attempt in concrete construction in this city was the new seven-story building for the Stewart Dry Goods Co. This building is now completed, and is in every way highly satisfactory. It is one of the ornaments of the city.

The work, which has been delayed for the past several months on the new warehouse being erected by the firm of Belknap & Co., at the corner of First and Washington streets, has been resumed and is progressing rapidly. The Oliver Co., Knoxville, Tenn., are the contractors for this building. The contractors for one of the largest pleasure resorts located near this city, have about completed their work, and this month will see the resort opened to the public and it will be known as the "White City." The fact that the foundations, the walks, and the basin for the big lagoon were constructed of concrete shows that the intentions of the promoters of this resort are to make it permanent.

Across the lagoon they have constructed a bridge, in which the contractors, the Imperial Wire and Iron Co., of this city, used reinforced concrete, and the results obtained by them shows the possibilities of the artistic work in concrete construction.

The lay out for this resort is patterned to some extent along the lines of the big St. Louis show, and the effects rendered in plaster and a composite of lime, sand, and stone show that a proper mixture of the same gives a pleasing effect along artistic lines. In all of this work Lehigh Portland cement was used.

The lagoon which covers an area of about 1,800 yards, has around it a platform or promenade of the same material as the basin, and is so arranged as to give a satisfactory appearance.

E. A. Quarles, of the Builders' Exchange, located in the Tyler building, of this city, says that the use of concrete as a building material, while in its infancy, promises to be generally accepted in future as the results obtained in the construction of the big department store of the Stewart Dry Goods Co., located at Fourth and Walnut Streets, are so satisfactory that people contemplating the erection of other buildings are sitting up and taking notice in a most attentive way. From Mr. Quarles' point of view concrete construction will be principally used in a number of new buildings, the plans of which are now on the tables in the offices of the architects.

The firm of Kenneth McDonald and W. J. Dodd, local architects, say that they are now engaged on a plan of a building to be erected at Frankfort, Ky., for the McClure Realty Co. The building will be of concrete construction.

Quarries.

Big Demand for Crushed Rock.

The crusher plants are all as busy as possible getting a start on the season's operations. There has been a goodly crop of road contracts for the people of this country are at last awake to the importance of building permanent roads, a public improvement which has been neglected for almost a century in some localities where they have always been needed the most. The volume of macadam contracts at this time appears to be considerably more than it was one year ago and the grind and hum of the crushing machinery and the boom of the blast in the quarry go merrily on. There is but one drawback to the whole proposition and that is that in many localities rival crusher operators have made the mistake of competing with one another in the business to the extent of eliminating profits out of the figures received for the work.

This doesn't mean that there is no profit in the crushing business but that in their eagerness to secure enough contracts to run their quarry and plant for the whole season in the spring lettings operators are not careful to get all that is coming to them in view of the fact that nearly every railroad in the country is short on ballast and that later on there will in all probability be a demand for stone that can not be filled because the crusher is already overloaded with low priced contracts that take up the entire capacity. The railroad purchasing agents are smooth enough to get in their orders on the lowest possible basis, and they are inclined to cause a car shortage for the crusher man who is not disposed to accommodate them with deliveries in stone at their own price. Some crusher men still feel that they are bound to accommodate the railroad on whose line their plants are located for fear that there will be a strange shortage of cars should they attempt to cut out the ballast business entirely and depend upon road contractors and the supplying of concrete to move the product of their plants. There is some pith in this and no doubt quite a few crusher operators will be up against this little game before the season closes. Just now the railroads pretend that they have all their ballast requirements taken care of, but later on it will appear that they are shorter this season than they were last year. If the crusher man has enough contracts on his books to keep running along smoothly he is pretty apt to get in on some ballast orders that he can produce by working over-time even if he is already full up. One thing is certain, the demand for crushed stone especially in the big cities and larger towns, will be largely increased this year, and every load of crushed rock will certainly find a buyer.

The crushing business was never in a better condition and it is up to the operators themselves to get what is coming to them. They are producing an indispensable product which is becoming more important every day, and the volume of the demand is steadily growing much faster than the source of visible supplies.

Bond Issue for Good Roads.

A Pittsburg representative in the Pennsylvania legislature has asked for a state bond issue of $50,000,000.00 to be devoted to road construction within the state of Pennsylvania. Public sentiment is at such a stage that the people generally would be only too glad to see this bond issue go through. The state of New York has already taken a similar method to raise money for good roads. There is good reason for the raising of the fund for the present demands upon the state highway department is for 2,500 miles of permanent highways, which will cost approximately $25,000,000.00. From the present time to June 1, 1909, $5,700,000.00 is available for the purpose of road building and as this leaves a deficit of nearly $20,000,000.00 upon present requirements without allowing anything at all for the future it is easy to see where the proceeds of the $50,000,000.00 bond issue will soon be taken up with additional applications.

Ballast Quarries for Railroads.

Owing to the unfilled demand for ballast for several years past several railroads have purchased stone properties, opened quarries and equipped them with crushing plants to produce ballast. With the stupendous growth of the macadam branch, where crushed rock is used in the building of roads, and the great call which is steadily increasing in volume that has recently developed in the requirements for concrete aggregate there is clearly a lack of sufficient crushing equipment to take care of the wants of the railroads whose growing necessity for ballast is increasing almost as fast as the other two sources of outlet for the producer of crushed rock. Up to the present time the ballast furnished to railroads has for the most part been furnished to them much more cheaply than they could produce it themselves, by crusher operators located at favorable points along the line. With the road and concrete contractors continually bidding higher for crushed rock the supply of ballast naturally grows shorter with each succeeding year, while the demand for the maintenance and reconstruction of the older railroad lines and new work is increasing with the growing business of the railroad.

Ballast is an indispensable factor in railroad construction and maintenance according to present methods, universally practiced, and the necessity of railroads owning and operating quarry properties and crushing plants has long been considered and is now being adopted as a policy by some of the most important systems.

The Michigan Central Railroad operates a quarry and crushing plant at Hagersville, Ont. The stone of this quarry is hard and the wear and tear of the machinery is above the average. D. E. Cronin, the superintendent of the plant, says that they operated nearly two hundred days in the year, 1906, which is a remarkable showing for any quarry in the north. Weather and labor conditions are such that 200 working days are considered much beyond the average.

This plant is equipped with Austin machinery throughout, a No. 7½ and a No. 5 crusher doing all the work of crushing approximately 1,000 cubic yards a day. Mr. Cronin reports the following item of interest:

Value of real estate	$4,100.00
Value of office, blacksmith shop and tenement houses	6,000.00
Value of plant	25,000.00
Total	$35,100.00
Cost of producing 197,196 cu. yds. of stone	$59,158.80
Cost (labor at 23c cu. yd.; running expenses at 7c cu. yd.)	94,258.80
Market price of 197,196 cu. yd. of crushed stone figured 58c cu. yd. at the crusher	114,373.68

The net gain as shown by these figures is $20,114.88 upon this crusher proposition, and perhaps the accommodation of certain supply that can not be deflected is worth as much more to the progressive railroad organization.

Further than this, the items enumerated clearly show that the railroads are at last awake to the crusher conditions, that they will either have to come to the front with more money for stone or go into the crushing business, as has already been done in some cases as shown.

What Good Roads Cost.

Interesting facts as to the cost of main road maintenance in the county of Yorkshire, England, are sent by Consul Walter C. Hamm, of Hull. The roads were well constructed originally and are well cared for now. It is a rare sight to see a rutty or muddy country road in the neighborhood. Most all of them are macadamized, well drained and kept in good repair. As a consequence one horse can draw a load which would require two or three horses over the usual country roads in America. There are about 1,100 miles of road in the county, and the cost of the roads has increased from $734,000.00 in 1895 to $910,000.00 in 1906, and the cost per mile from $654.00 to $832.00 in the same period. There is a constant tendency to increase the cost of maintenance, but this increase is, in part, accounted for by the construction of foot-prints and the placing of granite "setts" to protect the roads from injury by trolley lines.

Keep Your Eyes Open.

The quarry operator who fails to make a careful study of modern quarry equipment, such as steam shovels and locomotive trains, provided with elevating buckets is overlooking a bet that he can't afford to lose. Every operator who handles rock in every way for the purpose of reclaiming or manufacturing it into any useful commodity should make a point of carefully reading his ROCK PRODUCTS from cover to cover. It is impossible to get every item of interest into each special department of the paper. Many things that are said in one department are easily applicable to those that are engaged in some other line. There is a similarity of procedure in the manipulation of all of the quarry products and the progress of one branch can easily be reflected or translated into another with possibly a slight variation. Our advertisers are the standard producers of machinery tools and supplies for the equipment and maintenance of the establishment that is devoted to the manufacture of all kinds of rock products. What they have to say directly to the reader frequently suggests a money-making economy.

William H. Erb, of Palmyra, Pa., who recently purchased a limestone deposit near that place, has organized a company for the purpose of developing the deposit.

QUARRY AT PERU, IA., F. V. YOKE, MANAGER. FURNISH CRUSHED SANDSTONE FOR C. G. W. R. R.

Crushing Company for Carthage District.

The Carthage Rock Crushing Co., Carthage, Mo., have just completed a fine modern crushing plant and are prepared to furnish crushed limestone from the famous white quarries for all purposes. Beginning with ballast and macadam sizes this concern is prepared to furnish crushed limestone as fine as is desired for all purposes, such as concrete, glass works, asphalt, paving, roofing, etc. The plant is provided with a complete screening outfit, separating every desirable size, from 2 in. square to 50 mesh. The quarry is situated on the main line of the Frisco railroad and adjoining the city limits of Carthage. The manager of this plant, M. F. Viernow, is one of the oldest quarrymen in the Carthage district. Years ago he erected the first gang sawmill at Carthage and has been connected with Carthage stone interests for a quarter of a century. In equipping his new crusher he has spared no pains to provide ample facilities for taking care of all the modern requirements of crushed stone material.

The Tennessee Crushed Stone Co., of Maury county, Tenn., has been incorporated with a capital stock of $6,500.00 by W. R. Cole, M. H. Lindsey, J. J. Gray, Jr., G. T. Hughes and W. C. Hopkins.

The Quarry Co., of Milwaukee, Wis., has been incorporated with a capital stock of $15,000.00 by George Lines, Louis Quarles and Charles Quarles.

The Universal Crushed Stone Co., of Chicago, Ill., will issue bonds to the amount of $600,000.00, first mortgage and five per cent, to procure funds for extending the Ives quarries which the company recently purchased.

Install New Equipment.

The Clinton Point Stone Co., of Rockland Lake, N. Y., purchased some time ago a No. 9 and four No. 6 style "K" Gates rock crushers built by the Allis-Chalmers Co., Milwaukee, to be erected at their plant at Rockland Lake. Within the past few weeks, the new machines were placed in operation for the first time in the crushing of trap rock from the Hudson River palisades. The addition of this plant to the one already in operation at the same quarry, and adjoining the new crushers, makes one of the largest stone crushing plants in the vicinity, consisting of two No. 9 and eight No. 6 style "K" machines. The trap rock product from both plants is used in New York city and adjoining centers, for concrete and macadam purposes. All the stone is crushed to 1½ in. as maximum size, of which the combined plants will be capable of producing 2,000 tons or more a day. The method used for obtaining so fine a product from machines of the size of these installed is by means of shorthead and concaves by the use of which fine product may be obtained without departing from the accepted standards of Gates breaker construction, the only changes being a simple substitution of the crushing parts.

The Rock Cut Stone Co., of Syracuse, N. Y., has recently purchased additional Allis-Chalmers stone crushing, screening and conveying machinery for the quarries at Rock Cut, N. Y. The product is a fine quality of limestone crushed to the usual commercial sizes for use in Syracuse, and the rail points in the vicinity. The stone, which satisfactorily meets specifications for paving, reinforcing, fire proofing, etc., weighs approximately 2,300 pounds a cubic yard.

The Saratoga Trap Rock Co., of Saratoga Springs, N. Y., will install a No. 4 type "K" Gates crusher. The new machine will be made to produce material to pass a 1½ in. ring when the head is at its lowest point. It will be provided with a high arched spider and two receiving openings 8 x 30 in. This crusher will receive and crush the material rejected from a larger No. 6 crusher now in operation at the Saratoga plant. The crushing parts, head and concaves, will be of smooth chilled iron.

The Connecticut Trap Rock Quarries, of New Haven, Conn., are installing two new Gates iron frame screens, 48 in. x 14 ft. and 48 in. x 12 ft., respectively, at New Britain, Conn. The product from this plant is used for macadam and concrete purposes.

The Champlain Stone and Sand Co., of Sandy Hill, N. Y., recently purchased a complete Allis-Chalmers stone crushing plant, consisting of a No. 5 style "K" and a No. 3 style "D" Gates breaker; two 32 in. x 20 ft. screens, and one elevator about 64 ft. 6 in. long. The plant will be equipped with engine, boilers, pump, heater and friction drum hoist with an incline track used to elevate the stone to be fed to the No. 5 crusher. The stone to be crushed is trap rock and will be used for road work, concrete work and other purposes on roads and canals.

The General Crushed Stone Co. has recently purchased the plant of the Akron Stone Co., of Akron, N. Y., and is remodelling the plant. The company will furnish the ballast for the New York Central. The plant has a capacity of 1,000 tons a day.

The El Paso Stone Co., of El Paso, Texas, has been incorporated with a capital stock of $50,000.00 by W. N. Small, James Crawford and W. A. Cannon.

The Bessemer Limestone Co., of Youngstown, O., is furnishing much of the crushed stone for macadam in that vicinity.

The Inter-State Limestone Co., of Newcastle, Pa., has been incorporated with a capital stock of $75,000.00 by George W. Johnston, Charles H. Johnson, Robert Bentley, Joseph G. Butler, Jr., and Charles M. Crook. The incorporators are residents of New Castle, Pa., and Youngstown, O., and will develop the limestone deposits in the Mahoning and Beaver valleys.

The Kokomo Stone Co., of Kokomo, Ind., has been incorporated with a capital stock of $20,000.00 by Leonard B. Hodgin, Charles Hodgin and J. Edward Kelley.

A New Road Roller.

In France and England where roads are under government control, motor rollers have already been adopted with signal success. With this article we present the first motor road rollers ever made in America, which marks an epoch in road engineering. The wonderful success of the automobile and the adaptability of the gasoline engine is responsible for the invention and development of this machine. In fact, slight consideration makes such a proposition self-evident, as, during the entire century just passed, which marked the development of steam power to its highest possible efficiency, road locomotion was little known and was only perfected upon the advent of the gasoline engine.

Steam for the purpose of road-rolling was first applied about fifty years ago, when an ordinary traction engine was converted to such use by the simple expedient of furnishing it with smooth-tired wheels in place of the stripped traction rims. With some modifications in detail this type (so crudely evolved) has been in undisturbed possession of the field for power rollers until recently. Starting from these data, the Austin Manufacturing Co., Chicago, Ill., has produced the American motor road roller, the perfection of which has been attained by the most carefully considered and executed policy. Nothing has been left to experiment,, but knowledge from every available source has been brought to bear on the matter.

The valuable experience represented by the modern steam rollers has not been ignored, but the best points of all have been reviewed and turned to account in the new design. The same applies to the best gasoline engine practice; hence the American motor road roller embodies all previous experience of power rollers, both steam and motor, with many important improvements in design, workmanship and material. It unquestionably represents the perfection of the art in power road rollers and is a long step in advance of anything that has hitherto been made in this line, either in this country or abroad. An American roller, made in an American factory by American workingmen, and there is not an ounce of foreign material in it.

The machine is built in four sizes, 7, 10, 12 and 15 tons, offering economy and efficiency hitherto unknown to the road builder. It does away with the objectionable features that are well known to be a part of road rolling operations by the old machines. It has no smoke, steam, sparks, or soot. The expense of teams and men to furnish water and haul coal are entirely dispensed with. There is no need of a special licensed engineer with the cost of raising steam and laying up for boiler repairs together with the ever present risk of a boiler explosion. The motor roller has the advantages of carrying a small tank which will hold sufficient fuel to last for three months. It can be operated either by gasoline or denatured alcohol. It is up to the minute in every respect. It will haul a scarrifier, grader, road plow, stone wagon, or any other vehicle mounted on wheels. It has a powerful truss frame made of heavy steel plate which is especially designed to act as a frame and nothing else. Any wearing parts can be quickly removed from this frame.

The weight of the roller is distributed correctly and remains constant. Simplicity is the leading feature in the construction of the American motor roller. It has the fewest parts consistent with good workings. The start, stop, and reverse are controlled by a single lever, a simplicity of control found in no other roller. The speed of travel can be varied at the will of the operator by a slight lever movement, from the slowest motion ever required up to the highest speed that could ever be needed in any roller. The Austin Western Co. Ltd., Chicago, Ill., who built this machine, cordially invite the investigation and inspection of road contractors who want to see this machine in operation.

Purchase Bellevue Crusher.

C. R. Callahan and associates have purchased the controlling interests in the Bellevue Stone Co. Bellevue, Ohio, from Sol M. Wolf and W. M. Haliday. Mr. Haliday was the president and Mr. Wolf the secretary of this company for the past seven years, and under their guidance it has been a good money-making concern. Last year nearly three thousand car loads of stone went out from the plant and Mr. Wolf is regarded as a crusher manager of rare ability.

Big Crusher Plant at Gary, Ill.

The multiplied uses to which modern methods of construction and manufacture have put crushed stone products, has resulted in a demand which is growing steadily, and to meet which new resources are monthly being added. One of the latest and best examples of a stone crushing plant built and operated for the purpose of yielding big outputs, is the one recently placed in operation at Gary, Ill., by Dolese & Shepherd Co., Chicago, who are among the largest concerns in the country interested in the production of crushed stone. This plant is the largest of five owned by this company. The town of Gary, in which it is situated, is near the Chicago drainage canal on the Atchison, Topeka & Santa Fe Railway. The property surrounding the plant comprises some 280 acres, thinly covered with surface soil over a deep deposit bed of limestone.

The crushers used are a No. 9 and two No. 6 Gates machines manufactured by the Allis-Chalmers Co., Milwaukee. The No. 9 has a capacity of 300 tons an hour and the No. 6 machines are used to recrush to smaller sizes. The plant was designed to accommodate three additional No. 6 crushers to be installed later when required.

The engine equipment is also of Allis-Chalmers make, being a 600 H. P. Reynolds cross compound, Corliss type. The engine fly-wheel is bolted to a counter shaft which carries a belt wheel for driving the No. 9 crusher.

The quarry, now 40 feet deep, has an area of 35 acres. Loaded cars from the quarry are dumped automatically from the side on to the floor surrounding the head of the No. 9 crusher. The product from this machine is about 4 inches in size and is delivered by gravity to a pair of 4-foot revolving screens, 18 feet long. These screens are double or jacketed at the upper end so as to give double screening for the smaller sizes.

The 4-inch stone product coming from the No. 9 machine is used for flux in blast furnaces, and a train load of it is shipped daily to the Illinois Steel Co. at South Chicago. Smaller sizes of stone are used for railway ballast, macadam, and concrete work. The fine dust or screenings is being used to a large extent as a substitute for sand in some cases. Transportation facilities are provided by means of a private railroad fifteen miles in length, built by the company and connecting with the principal trunk lines about Chicago.

The Lowell M. Palmer Co., of Cold Spring, N. Y., has been incorporated with a capital stock of $60,000.00 by H. M. Brigham, E. V. Nelson and A. W. Brigham for the purpose of dealing in crushed stone.

The Cobleskill Crushed Stone Co., of New York, has been incorporated with a capital stock of $150,000.00 by F. M. Ferguson, F. W. Edmondson and A. L. Richmond.

The crusher house of the Standard Stone and Lime Co., of Millville, Jefferson county, Mo., was destroyed by fire April 13, with a loss of from $8,000.00 to $10,000.00.

New Plant Near Philadelphia.

The Davis Trap Rock Quarry Co., Inc., has under construction a new trap rock crushing plant at a quarry recently opened at Green Lane, Montgomery county, Pa. The equipment for the present comprises a No. 3 Gates breaker, three 9 x 15 Blake crushers, one 60 ft. Gates elevator, and one 48 x 20 Gates screen. The capacity of this plant when completed and in full operation will reach 600 tons daily of crushed trap rock, screened into railway ballast and commercial sizes for concrete use. The quarry and crushing equipment are situated on the Philadelphia and Reading railway, and directly contributing to all points in Philadelphia county and nearby points. The trap rock quarried at Green Lane weighs approximately 2,300 pounds a cubic yard in the crushed state and meets all the requirements of standard specifications for paving, concreting, reinforced fire proofing, highways, and for railway ballast.

Texas to Have Good Roads.

The El Paso Foundry and Machine Co., of El Paso, Tex., recently purchased an equipment of Gates rock crushers and Gates elevators, for the El Paso Stone Co., of that city. The El Paso Stone Co. has secured a contract from El Paso county to furnish crushed rock for improving its roads, and the new plant is being erected and equipped for providing the necessary crushed rock for this particular contract, and also to furnish crushed stone for all purposes in the vicinity. The only quarry in the entire El Paso section where granite is available is controlled by the El Paso Co., so that the products from this plant can not fail to be in demand. The crusher is a No. 6 Style "K" Gates machine, equipped with chilled iron crushing parts, and a No. 6 Gates elevator having 30 in. centers. This equipment will be located in the suburbs of El Paso, where it will be easily accessible to the railroads by which much of the plant's output will be used.

Take Out Crusher Patents.

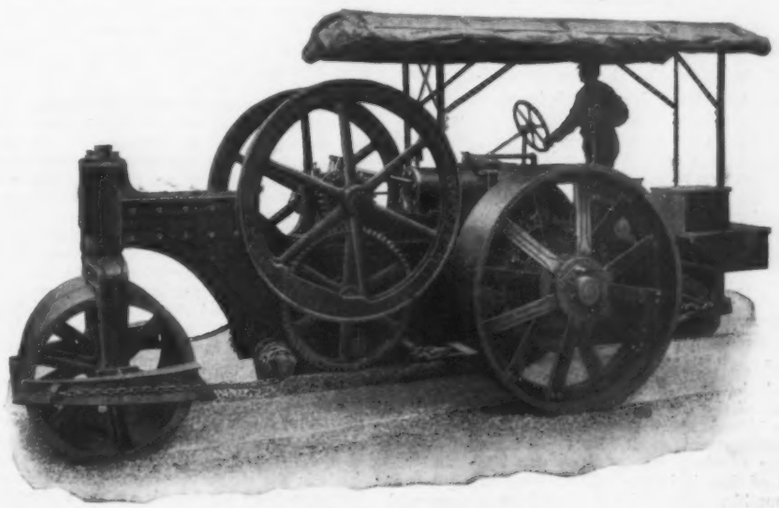
E. A. Velde, Cedar Rapids, Iowa, has taken out American patents on the Lorch crusher made in the village of Korntal near Stuttgart and intends to organize an American company to manufacture this machine, which has made a special record in the cement lime and plaster industry.

The United Brick and Material Co., of 10 Third Street, San Francisco, Cal., desire to be put in touch with the "state of the art" of hydrating lime.

The New England Lime Co., of North Adams, Mass., has begun the erection of new kiln and store houses.

The Idaho Lime Co., of Spokane, Wash., has increased its capital stock from $25,000.00 to $30,000.00.

Creditors of the Tennessee Hydrated Lime Co., of Nashville, Tenn., have filed a petition in involuntary bankruptcy against the company.



NEW AMERICAN MOTOR ROAD ROLLER.

Lime.

The National Lime Manufacturers' Association.

Meets Semi-Annually

Peter Martin, Huntington, Ind	President
A. A. Stevens, Tyrone, Pa.	First Vice President
W. B. Carson, Riverton, Va	Second Vice President
T. H. Fleischer, Sheboygan, Wis.	Third Vice President
C. W. Cobb, St. Louis, Mo	Treasurer
E. H. Defebaugh, Louisville, Ky	Secretary

Official Organ, ROCK PRODUCTS.

Pertinent Points for Lime Men.

Do your part and let us have a man in the lime trade whose business it is to bring competitors closer together and spread the knowledge of improved methods throughout the association territory from Maine to California.

This should be a good year for hydrated lime.

It depends on the color of the glasses you wear which seems the best way to hydrate lime, but to hydrate it by any of the methods means greater results from the product of the kiln. It seems to us that it is what we are all after.

The location of the kiln in order to handle stone economically as well as your manufactured product, is a problem that the new man has to solve. If he could have the advantage of the old man's experience it would help.

Don't try to blow up the whole earth when making a blast. You will make haste by drilling more holes and using smaller blasts.

By using lighter gauge rails there is economy in the railroad in the quarry.

By working your men on the tonnage basis in the quarry in most cases it is possible to reduce your costs.

If that peat fuel proposition will work out there will be a lot of bogs worked into fuel and the cost will be reduced.

It is a great inspiration for men to get together and talk over their difficulties and their pleasures in a business way. That is why ROCK PRODUCTS has ever urged lime manufacturers to co-operate financially, morally and socially for the benefit of the industry.

Statistical records in the quarry are as essential as bookkeeping in any form and should be used.

Another Point for Hydrated.

We notice from the last report of the Millers' National Insurance Co. that during 1906 one flour mill was lost from fire caused by slacking lime. There is a hint in that not only for the users of lime but also to the manufacturers of lime. Hydrated lime is already slaked. All that is necessary to use it is to pour on water and mix. No heat is given off for the process of hydration has already been completed and there is no danger of fire as far as the lime is concerned. If you want to avoid fire use hydrated lime.

Hydrating Plant in California.

POMONA, CAL., April 3.—The Pomona Lime Co. proposes to soon install in Los Angeles a hydrating plant of considerable capacity for the preparation of lime of the finest grades for interior work. The business of the company, which has quarries in the Puente hills, is steadily increasing. Under the general management of R. N. Loucks, about fifteen men are regularly employed on two kilns, and the output of lime is in the neighborhood of 3,500 barrels monthly. All of the product is at present sold for brick mortar, as it possesses cement qualities especially adapted for brick work.

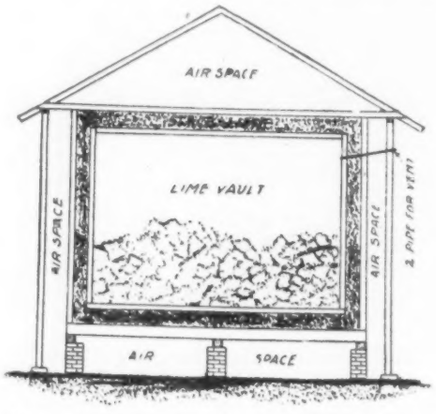
How to Build a Lime House.

The country is literally full of poor lime houses, a large amount of lime going to waste yearly, in their regard simply responding to its laws of nature, the yard men being at fault in their efforts to preserve it. When bulk lime is stored in rooms which are really no better than open sheds, the air coming in around the doors and windows, and often through the walls and floors, it will surely slack—and this is descriptive of a typical storage place for lime that is used by thousands. So poorly have many succeeded in preserving lime in bulk that in its place they handle it in barrels, always at a decidedly smaller percentage of profit.

It is not difficult, however, to keep bulk lime from slacking if the proper precautions are taken. The accompanying sketch will explain all that is known to date on the science that has a bearing on the subject. It will be seen that the vault proper is really one box inside of another, the space of six inches between them to be filled with slack lime. There is no doubt other material that would answer as well, but the yard man who sells bulk lime and has not on hand enough that is slacked to fill the required space will in all probability have no desire to build a lime house.

A Properly Conducted Lime House.

Around the box or vault is built the house, leaving an air space of six inches between the vault and the walls of the building. On the top of the building will be seen a ventilator, but it is hoped no one will think that its mission is to exhaust the air from the lime vault, as that would undo all that has been done in the way of building tight walls. The



object of this ventilator is to create a current of air around the vault and, to secure this current, air must be admitted at the bottom.

In some houses a pipe an inch and a half in diameter—represented by a black line on the diagram—extends from the vault through the walls, its object being to let off the gases. In case it serves this purpose it should be so constructed that it will close automatically. There are handlers of lime, however, who have not discovered that this vent pipe is a necessity.

The door should be made with care. Carpenters often exercise all the skill they possess in building the walls as tightly as possible and then put in doors around which the air can enter as though they were sieves. The smaller the door the smaller the volume of air which will come in contact with the lime when it is opened. A door 2 x 2 feet is large enough, as through a door of this size with a long handled shovel every part of the vault can be reached. For durability the floor should be of hardwood —either birch or maple is excellent—the friction caused by lime and shovel quickly wearing through soft wood. There must be provision for shoveling the lime into the house, and to meet this requirement a small door must admit into the vault near the top. This door, when shut, should also be air tight.

This principle, as described, is the one involved in the building of all lime houses which have proved satisfactory. In construction the plan may be modified, the more common change being to make the vault in the shape of a hopper. In this event it is better to have the boards set on a slant hardwood, so that the lime will not wear them rough and cling to them.

There are probably more good lime houses in Wisconsin than in any other state, due to the fact that a Wisconsin man has a patent on a lime house that has been adopted by many of the yard men There is also another patent house—the patents on both of them, however, cover methods of construction, the object being the same, namely, to exclude the air. If the dealer has the ingenuity to build a vault that will meet this requirement he need spend no extra money for patented devices.

Every yard man who sells barreled lime in small quantities knows the perplexities attending it, particularly after the barrel is two-thirds, or thereabouts empty. The nails with which the hoops are fastened often reach an inch or two into the barrel, the shovel catches on to these nails and perhaps the hand rakes against one of them. Often in a spirit of vexation the shovel is thrown down and the yard man picks up the lumps of lime with his hands, and as a lumberman's hands are supposed to be so tough that slivers will not stick in them lime will not more than eat the skin from them. This lime box is a most convenient appurtenance to a lime room. It is made of 2-inch stuff, is three feet long, two feet wide, a foot and half high, and one end is put in slanting in order that the lime may be easily shoveled from it. It holds a barrel of lime and the cover shuts closely and hooks.—Republished from ROCK PRODUCTS of June, 1904.

An Economical Fuel for Lime Burning.

BY FRANCIS J. BULASK, TOLEDO, O.

The past two years have been years of hard sledding for the peat fuel manufacturer, owing to the numerous articles that appeared from time to time in our leading dailies and technical papers by writers who in the main had no accurate knowledge of their subject, but simply quoted or appropriated extracts from others perhaps no better informed, and also from unscrupulous promoters of stock companies who saw in peat and its possibilities grand opportunities to ply their trade, and all to the detriment of an industry so well established in the old country, that no thought is given to experimentation other than to advance an art already well grounded.

The writer has traveled all over the United States, Canada and Mexico, and has found a number of instances where large amounts of money have been spent in endeavors to do wonders with peat. We will give them the benefit of the doubt, and say through inexperience, as wonders can be and will be done with peat as the next decade will show.

From the outset, this company looked to the old country for information obtaining membership in two of the leading peat associations of the old country, reasoning on the theory that the process which was evolved after a great many years of unremittant effort, and was used to the exclusion of all others, was good enough to start on; and, instead of importing a machine for this process, a German engineer of prominence was set to work to design one for American use. How well he succeeded is answered by the fact that the company has the installation of several similar plants under consideration.

This "Wet Process" makes a fuel from fuel peat that is impervious to water, clean, practically smokeless and when properly dried, quite elastic, and having from 4,000 to 12,000 B. T. U. a pound. For domestic purposes it is an ideal fuel.

Mistakes have been made without number in not learning the requirements of peat necessary for fuel purposes. It has been said and it is quite true that no two bogs are alike. A good fuel bog can be determined only by analysis. Surface indications are no criterion, other than that a thoroughly decomposed peat is more likely to be valuable.

The Commercial Artificial Fuel Co. proceeded to work out and Americanize the process so generally used. The results obtained can be better realized upon a personal visit to their plant. However, to those unable to spare the time I will say that efforts were made and accomplished to discount the cheapness of German labor by labor-saving machinery, such as dredge, elevating and cut-off machinery, and the development of an adjustable peat mill which would meet the requirements of the great variety of peat found in this country. After four years of continuous labor, success crowned their every effort and now the proposition is ready to fill its niche in line of successful manufacturing establishments of this country.

Instead of peat fuel as broadly advertised by the above mentioned promoters, being superior to all kinds of fuel for all purposes, it is only just to say

that for domestic purposes, such as kitchen ranges and furnaces, it is ideally adapted, and if coal for boilers were bought according to its B. T. U., it would meet its competitor for an economical fuel, but where fuel for a special purpose is wanted, peat with its peculiarities, meets all the requirements.

For instance, the writer was told by one of the foremost lime manufacturers of this country that owing to its long flame, it would burn approximately 50 per cent more lime than the best of coal, being superior to the best wood formerly used.

As there would be no necessity for a change of kilns, and owing to its extremely long flame, this greater production without any increased expense for kilns, develops an economical feature that every lime burner needs to look into. The total absence of sulphur makes it additionally valuable, being therefore a free burning fuel with an intense heat, which, under a draft, assumes incandescence. There being upwards of 60 per cent of volatile hydrocarbon the term of "solidified gas" is no misnomer.

At the plant of the Commercial Artificial Fuel Co., where power is generated exclusively by peat coal under boilers and fire boxes built for coal, the peat flame reaches the extreme rear end of the boiler, and owing to its cleanliness, absence of soot, smokelessness, the chief engineer, Robert Janney, remarked that he would rather be both engineer and fireman with peat as fuel than engineer alone with coal.

In older countries an ever-increasing use is being found for it. Holland in its history has used upwards of one and one-half billion dollars worth of peat fuel. The Prussian railways yearly use 500,000 tons, and the revenues received by the Czar of Russia from rentals of peat bogs yearly aggregate $938,000.00.

" Wet Process" peat is sold in large quantities in Germany, Austria, Denmark, Sweden and Russia, and is used not only for domestic purposes, but also for manufacturing, metallurgical and other industrial operations. A great many steam boilers, including railway locomotives, are fired with this variety of peat, while in breweries, distilleries and under salt pans, it is preferred to other fuel.

The peat-coal as manufactured by this company contains between 10,000 and 12,000 B. T. U. a pound, making it equal in value to the best grades of bituminous coal for general purposes.

The success met with by the company can not be better measured than by the inquiries received from all over the United States, Canada and Mexico for duplicates of its machinery, and peat-coal companies throughout the land, and who now acknowledge their failure to produce a marketable fuel economically, are looking to this company to give them a new lease of life. Visitors from as far north as Winnepeg, Manitoba, San Francisco on the West, Mexico City on the South and New York City on the East, together with several foreigners—skilled in the industry—have pronounced this company's endeavors an unqualified success. Seeing is believing. Visitors are welcome at any time.

Every One Wants Hydrators.

The hydrating feature of the lime business is growing all the time and there is no doubt that it has come to stay. Lime manufacturers are learning the necessity of putting this brand on the market and the houses that supply these plants are rushed with orders. The Kritzer Co., of Western Avenue and Seventeenth Street, Chicago, Ill., report the following contracts for hydrating plants made within the last six weeks:

Knickerbocker Lime Co., Philadelphia, Pa.
Marblehead Lime Co., Chicago, Ill.
Standard Lime and Stone Co., Fond du Lac, Wis.
H. Dittlinger, New Braunfels, Tex.
Sandstone-Brick Lime Co., Seattle, Wash.

Creditors May be Paid in Full.

FREDERICK, MD., April 12.—George S. Rodock, of Frederick; William J. O'Brien, Jr., and Ernest Y. Clark, of Baltimore, have been chosen by the creditors of the Frederick City Lime and Stone Co., bankrupt, as trustee of the company's property. Since the company made application for the benefit of the bankruptcy law, in January last, Wm. J. O'Brien, Jr., has been acting as receiver, and he, on March 1, executed a 90-day lease of the company's plant to New York parties.

The trustees will take charge upon the expiration of this lease. It is not yet determined whether operations will be continued, but there is said to be a chance of the creditors being paid in full.

Cement.

Cement Manufacturers Meet.

The Association of American Portland Cement Manufacturers held their regular quarterly meeting April 8, 9, 10 at the Bellevue-Stratford Hotel, Philadelphia. It was one of the most largely attended quarterly meetings ever held by the association and there was a suppressed air of excitement throughout the session as several important matters came up for discussion.

The only open session of the association was held Wednesday morning at which anyone interested could be present.

President John B. Lober presided and the session proved to be one of the most interesting ever held by the association.

The first paper read was that of H. L. Weber on "Concrete Roadways," which is printed on page 39 in this issue.

Following the reading of this paper a discussion arose among the members, and Mr. Weber answered several questions. The next paper was that on "Cement Concrete Roads," by Walter S. Hassam, which is printed on page 38 of this issue. Following this paper President Lober said that as Mr. Hassam had an important engagement in New York he would have to hurry away, but that he would be pleased to answer any questions regarding the subject. Many questions were asked regarding methods of laying the concrete and its treatment, and S. B. Newberry gave the results of his observations and tests made along the same line, as did also R. L. Humphrey and Edward S. Larned, of Boston, and others.

The third paper was illustrated by stereopticon views and was on the subject of "Concrete Bridges," by George S. Webster, chief engineer of the Bureau of Surveys of the City of Philadelphia. There were about twenty-five views of concrete bridges in various stages of construction. The plans and specifications were also shown and comparisons made as to cost, compared with steel and masonry. Mr. Webster went into the subject exhaustively and answered a number of questions propounded during his talk. It would seem from what Mr. Webster says that in almost every instance concrete and reinforced concrete was not only more satisfactory but considerably cheaper than steel construction. He said they were more economical from every point of view. He invited the members to visit some of the bridges while in Philadelphia and said they might have an opportunity to see one in course of construction at the present time.

A great portion of Mr. Webster's talk was impromptu and was taken by the stenographer and will be printed in the Association Bulletin. The association then adjourned to meet the second Tuesday in June. After adjournment all were invited to partake of a luncheon provided by the association.

In point of interest the meeting was one of the most successful ever held by the association. President Lober, when asked for an expression, said that nothing had transpired at the association meetings that could be given out at the present time. He said that the interest manifested in the papers read was keen and the discussions showed that the association appreciated the importance of the subject. The meeting was a successful one from every point of view and the papers were all enjoyed.

Edward S. Larned, of Boston, one of the greatest authorities on concrete construction in the country, was to have read a paper on "Tests of Cement and Cement Products," at this meeting, but decided to read it at the next meeting of the association in June.

ATTENDANCE.

Alma Cement Co., A. C. McFarland, secretary.

Alabama Portland Cement Co., P. H. Moore, general manager.

Alpena Portland Cement Co., Charles H. Reynolds, secretary.

Alpha Portland Cement Co., A. F. Gerstell, vice president; Henry Longcope, manager Philadelphia sales office; J. B. Wight, manager New York sales office.

Alsen's American Portland Cement Works, W. P. Corbett, secretary and sales manager; Max Cappus, treasurer.

American Cement Co., Robert W. Lesley, president; R. E. Griffith; C. M. Camm.

Atlas Portland Cement Co., Howard Maxwell, treasurer.

Bath Portland Cement Co., George W. Roydhouse, president; B. F. Stradley, sales manager; B. F. Franks, superintendent; J. A. Horner, secretary; F. M. Hoover, salesman.

Bonneville Portland Cement Co., George T. Burridge, sales manager.

Buckeye Portland Cement Co., Charles F. O'Donnell, treasurer and general manager.

Buckhorn Portland Cement Co., Abram C. Mott, president.

Catskill Cement Co., J. W. Kittrell, secretary and treasurer.

Castalia Portland Cement Co., George W. Hackett, president and general manager.

Chicago Portland Cement Co., Norman D. Fraser, president; D. D. Drummond, superintendent; J. U. C. McDaniels.

Coplay Cement Manufacturing Co., W. H. Harding, president; S. Y. Heebner, treasurer.

Dexter Portland Cement Co., Conrad Miller, president; Joseph Brobston, secretary, treasurer and general manager; R. K. Meade, chemist; C. Weber Jones, sales agent.

Edison Portland Cement Co., W. S. Mallory, vice president; E. Meyer, sales agent.

German-American Portland Cement Works, Fritz Worm, president and treasurer; Edward L. Cox, general sales agent.

Glens Falls Portland Cement Co., Geo. F. Bayle, president; W. L. Douglas, sales manager.

Helderberg Cement Co., T. Henry Dumary, president; Frederick W. Kelley, vice president and general manager.

Hudson Portland Cement Co., E. Bravender, general manager; Frank E. Wade, attorney.

Iroquois Portland Cement Co., C. T. Richmond, treasurer; R. A. Crider, assistant treasurer.

Kansas Portland Cement Co., George E. Nicholson, president.

Lawrence Cement Co., O. G. Johnson, salesman.

Lehigh Portland Cement Co., E. M. Young, treasurer; George G. Sykes, secretary.

Louisville Cement Co., F. M. Sackett.

Marquette Cement Manufacturing Co., N. W. Duncan, president and treasurer; W. Dickinson, sales manager.

Thomas Millen Co., Deaune Millen, president.

Newaygo Portland Cement Co., D. M. McCool, president.

Northampton Portland Cement Co., C. P. Jameson, general manager; H. A. Schaffer, chemist; W. B. Kugler, salesman.

Peninsular Portland Cement Co., John W. Shove, secretary.

Penn-Allen Portland Cement Co., Avon Barnes, president; W. R. Yeager, treasurer; W. E. Erdell, general manager.

Pennsylvania Cement Co., W. N. Beach, president; R. F. Bonner, secretary.

Phoenix Cement Co., William Turner, president; George W. Laub, treasurer; W. G. Nash, salesman.

The Portland Cement Co. (Denver, Col.), Whitney Newton, vice president and general manager; Fred W. Brown, superintendent.

Sandusky Portland Cement Co., A. St. J. Newberry, president; S. B. Newberry, superintendent; Mr. Arnold, superintendent of York, Pa., plant.

St. Louis Portland Cement Co., A. H. Craney, Jr., president; H. Struckman, manager.

Universal Portland Cement Co., Edward M. Hagar, president; E. F. Affleck, general sales agent; B. H. Rader, manager of Pittsburg sales office.

Virginia Portland Cement Co., Dane E. Rianhard, secretary; S. R. Preston, superintendent; J. W. Zipperlein, salesman.

Vulcanite Portland Cement Co., John B. Lober, president; W. D. Lober, secretary and treasurer; Albert Moyer, sales manager; W. R. Dunn, superintendent; L. L. Griffiths, assistant superintendent; S. Warren Hartwell, chemist.

Western Portland Cement Co., Wm. C. Plankinton, president; George S. Bartlett, vice president.

Whitehall Portland Cement Co., W. C. Kent, second vice president; H. B. Price, treasurer; H. B. Green, sales manager.

Wolverine Portland Cement Co., L. M. Wing, president; Harry Bastianelle, director.

Notes of the Meeting.

The question of freight rates, while it did not come up in the meeting, was generally discussed by the members present. The railroads have raised the freight rates five cents a barrel, beginning April 1. They assert that the price of all materials in construction, equipment and maintenance, has increased to such an extent that they are justified in boosting the freight rates on cement. Inasmuch as there are approximately about 45,135,000 barrels of the product manufactured each year, this will mean an increase to manufacturers, builders or users of that article of just about $2,256,750.00 the coming year. The price of the best grades of cement took a bound of five cents a barrel (in bags), coincident with the jump in rates, so the public will have to foot the extra expense.

George S. Webster, who read a paper on "Concrete Bridges," is chief engineer of the Bureau of Surveys, of Philadelphia. Probably no man in the country has devoted so much thought and study to this subject as Mr. Webster has. Under his direction a number of reinforced concrete bridges have been constructed in this city and he is an enthusiast on the subject. Some of the members present accepted Mr. Webster's invitation to inspect the Walnut Lane bridge over the Wissahickon river in Philadelphia, which is in course of construction.

The machinery men were out in force. They were a jolly lot of fellows, and while the meetings were being held by the cement men they held several informal sessions among themselves. Among those present were: Horace G. Kimball, of the Kent Mill Co.; J. W. Fuller, Jr., secretary and treasurer, and Clifford W. Lyon, of the Lehigh Car Wheel and Axle Works; George S. Emerich, of air separator fame, and Albert J. Meyer, one of his engineers; H. G. Barnhurst, Fuller Engineering Co.; Wm. D. Craven, Jr., and C. A. Burns, of the Allis-Chalmers Co.; John T. Jeter, of the Vulcan Iron Works; Carleton Ellis, of the Combustion Utilities Co.; James L. Stuart and T. E. Beebe, of the Stuart-Beebe Co.; W. L. Schroeder and Henry Robiczek, of the Arthur Koppel Co., and Henry S. Spackman, of the Henry S. Spackman Engineering Co.

The Arthur Koppel Co. was the only machinery concern that had a display. They occupied one of the large parlors on the main floor and had on exhibition a miniature line of their cars and equipments. They presented to each visitor a handsome leather bound memorandum book, containing a lot of useful information and a cigar paper weight.

Carleton Ellis, representing the Combustion Utilities Co.'s "Impinging Flame," presented the cement men with an electric vest pocket light. This is not only a useful and ingenious trick, but costly, and was much prized by all those who received one.

One of the most popular men at the convention was Horace S. Kimball, of the Kent Mills Co. Everybody knows Mr. Kimball and Mr. Kimball knows everybody, and it keeps him busy greeting his friends and giving them the glad hand. He is one of the most polished men in the trade and has a pleasant word for every one.

One of the busiest men at the convention was J. W. Fuller, who was explaining the merits of the Fuller-Lehigh pulverizers. Mr. Fuller is young and full of energy.

Charles H. Reynolds, the secretary of the Alpena Portland Cement Co., attended the association meeting for the first time. The Alpena did not suffer by fire to such an extent as was reported and will commence operations again in May with a capacity of 1,200 barrels a day. The fire was in the raw end and the machinery was practically unhurt. The new building now being erected will be all iron and steel and all chance for a fire will be eliminated.

John Monahan, of the Alpena Portland Cement Co., accompanied by his daughter, sailed for Europe early in April. He will visit his old home in Ireland for the first time in forty years. Many of his old friends inquired for him at the meeting.

The next meeting of the association will be held at Norfolk so as to give the members an opportunity to visit the Jamestown Exposition.

Richard L. Humphrey is preparing a paper on concrete as affected by earthquakes which will be read at the next meeting.

C. Earle E. Bottomly, the efficient secretary of the association, is popular with the members and is the right man in the right place. While quite a young chap he has an old head.

George S. Emerick was much in evidence at all times. He brought his wife along and they were mistaken for a bride and groom. He is one of those men who have trouble convincing people that they are as old as they are. He will never get older than forty if he lives to be a hundred, and his friends sincerely trust he will touch the century. Of course Mr. Emerick doesn't want to discuss business at one of these conventions, but he said they were busy and have had great trouble filling orders for his line of machinery.

One of the most important things decided at the meeting was to define once and for all, the difference between a sack and a bag. This has been confusing to a number of people and the association decided to settle the matter. Hereafter the term sack should be applied only to a cotton or cloth sack and the term bag only to a paper bag.

James L. Stuart and T. E. Beebe, of the Stuart-Beebe Co., of Pittsburg, who are consulting engineers and builders of cement plants, are building the addition to the Chicago Portland Cement Co.'s plant. They are also constructing the plant for the Federal Portland Cement Co. at Morgantown, W. Va., which will have a 1,200 barrel capacity at the start.

William Scott Humbert, of Buffalo, N. Y., one of the largest dealers in cement in that section, was a visitor to the association meeting. Mr. Humbert says that business is opening up fine and that the prospects are that the season will be a big one.

N. E. Erdell, the general manager of the Penn-Allen Portland Cement Co., said that he had been giving the plant a thorough overhauling and that things were now in fine shape. They will not increase their capacity for the present.

One of the most interested and most interesting visitors at the meeting was W. S. Campbell, of Denver, Col. Mr. Campbell is a breezy Westerner with an Eastern polish, and knows the cement business. He is figuring on building a cement plant in the West.

Whitney Newton, the vice president and general manager of the Colorado Portland Cement Co., was one of those who attended the meeting for the first time and was much pleased with the association work. His company is one of the oldest of the Western companies, having been in operation for about eight years. The plant is located at Pueblo and the main offices are in Denver. They have a capacity of about 750,000 barrels a year at present, and operate eight kilns. The company also manufactures gypsum wall plaster and hydrated lime, being one of the first to hydrate lime in the West. They will shortly open up some coal mines which are on their property.

Harry Warner was missed at the convention. His many friends will be glad to know that he is on the rapid road to recovery, and unless some unforeseen circumstance occurs he should be out in about another month. He has had a severe attack of typhoid-pneumonia, and at one time the doctors despaired of saving him, but his marvelous constitution pulled him through.

Henry S. Spackman, of the Henry S. Spackman Engineering Co., was on hand. He said that his firm is busy at the present time.

The Osborn Engineering Co., of Cleveland, have taken the contract for the building of the Central Portland Cement Co.'s plant in Montgomery county, Kan. The plant will have an initial capacity of 2,000 barrels a day. The location is ideal as the supply of limestone and shale is practically inexhaustible, and both gas and water in close proximity. The Sante Fe passes through the center of the property and the Missouri Pacific is within a short distance. The general offices of the building are located in the Bryant building, Kansas City, Mo.

The Universal Portland Cement Co. have decided to build a plant at Duluth, Minn., at an early date. The capacity of the plant at the beginning will be 2,000 barrels a day. This is an excellent location for a cement plant, being at the head of the great waterways and the natural distributing point for the Northwest.

Demand in Cuba for Cement.

Consul M. J. Baehr writes that Portland cement is in good demand in Cuba, one dealer at Cienfuegos receiving 600 barrels monthly. The consul says:

"During the fiscal year of 1905-6, 31,749 barrels of Portland cement were imported through Cienfuegos, 29,389 coming from the United States, 1,279 barrels from France, 639 from Germany, and 442 from Spain. Concrete is not yet extensively used in the construction of buildings. It is becoming popular, however, in bridge building and in the construction of pavements, sidewalks and sewers. Last year this city contracted for a modern system of waterworks and sewers. The $2,376,157.00 bid of a New York city contractor was accepted. Something like 50,000 barrels of cement will be required for this contract, and I understand that a commission merchant has already sold for the purpose 15,000 barrels. The present selling price per barrel ranges from $3.75 to $4.00 Spanish gold, worth 91 per cent at present. Cement comes in wooden packages only. The duty on a barrel of 100 kilograms from the United States, including the cost of the barrel, is 30 cents. The freight rates from New York, New Orleans or Mobile are alike and range from 48 to 50 cents per barrel.

"Manufacturers desiring to introduce a new brand of Portland cement in this market should, first of all, appoint an active local agent who is thoroughly acquainted with the conditions here, then assist him by quoting lowest prices and easiest terms possible. A good agent always deals with reliable firms, and they should not be required to pay for cement before it arrives and should never be drawn on, as they invariably remit promptly on receipt or arrival of the goods. Names of cement dealers and extensive builders at Cienfuegos are on file at the Bureau of Manufactures."

Portland Cement in Canada.

Much Portland cement was manufactured in Canada last year according to the following figures: 1906, 2,152,562 barrels; 1905, 1,541,568 barrels, an increase of 610,994 barrels, or 39.6 per cent. The following figures show the amount of Portland cement in Canada: 1906, 2,119,764 barrels; 1905, 1,346,548 barrels, an increase of 775,216 barrels or 57.4 per cent. It is said that the number of cement companies operating plants in Canada last year was fifteen with a total daily capacity of about 10,500 barrels, namely: One in Nova Scotia, two in Quebec, eleven in Ontario and one in British Columbia. The imports of Portland cement into Canada last year were valued at $778,706.00. The imports in 1905 were equivalent to 917,558 barrels, valued at $1,138,548.00, or an average price per barrel of $1.24. There is little cement exported from Canada. The consumption is, therefore, practically represented by the Canadian sales, together with the imports. The following is an estimate of the consumption of Portland cement in Canada for the past six years: 1901, 872,966 barrels; 1902, 1,139,548; 1903, 1,401,419; 1904, 1,694,988; 1905, 2,264,106; 1906, 2,814,267.

Reports Business Excellent.

The ROCK PRODUCTS office was recently favored with a visit from Washington Harder, representative of the William G. Hartranft Cement Co., of Philadelphia. Mr. Harder has made a trip through the Southern States and says the outlook for the present year throughout the South is bright, even brighter than it has been for some time. The William G. Hartranft Co. handle three brands of cement, Old Dominion, Phoenix and Buckhorn. The plant manufacturing the latter brand of cement has just recently resumed operations at Manheim, W. Va., and will have the capacity of 1,200 barrels a day. Mr. Harder says that with these three brands they are having a nice business.

Costa Rican Cement Imports Increasing.

A report from Consul J. C. Caldwell, of San Jose, shows that the cement imports of Costa Rica in 1906 were double those of 1905. Belgium's sales advanced from 63,220 to 351,498 kilos (kilo, 2 1-5 pounds); the United States' sales from 261,085 to 477,278 kilos; Germany's sales from 683,349 to 1,194,650 kilos; while Great Britain's shipments dropped from 91,361 to 81,273 kilos.

Retires From Cement Business.

Charles F. Wade, secretary of the Omega Portland Cement Co., of Janesville, Wis.; vice president of the Association of Cement Manufacturers, and one of the most popular men in the cement business, a high class gentlemen always, and one of the best fellows ever connected with the business, is severing his active connection with the manufacure of cement, and shortly goes to join the management of the American Lumber Co., of Albuquerque, N. M. What is the lumber trade's gain is a loss to the manufacturing cement business, for if you met Charles F. Wade, he captured you. Resolutions of regret and Godspeed were passed at recent meetings of the cement bodies with which Mr. Wade has been connected, and ROCK PRODUCTS' wishes to join in the shedding of tears for the loss of Mr. Wade from the cement business, but through the *Hardwood Record* we give him the right hand of fellowship in the lumber business and will see that he properly initiated and put at the head of the class. We presume that he will make those dignified little speeches about cork pine when he gets down in the arid country and spends his time looking over the large operations of the American Lumber Co., which include thousands of acres of the best quality of pine lumber to be had nowadays.

One of our callers this month was Edward Hely, president of the Diamond Flint Co., of West Point, Ind. They are opening up this flint mine and will put in a steam shovel and operate the plant. R. R. Moreman, of Lafayette, Ind., will manage the operations with headquarters at Lafayette. Mr. Hely operates a crushed stone plant at Monon, Ind., and they are getting busy, having several contracts on hand, and at his Cape Girardeau plant they expect to take out a good deal of ballast this year.

Cement Plant in Maryland.

BALTIMORE, MD., April 15.—The Maryland Portland Cement Co., which was recently organized to build a cement plant near Hagerstown, on the Western Maryland railroad, has let a contract for a portion of the machinery to be used in the factory. The latter will be erected under the supervision of Major F. H. Lewis, of Leeds, Alabama. The cement company is the first of its kind in Maryland, and it is controlled by local capital. Charles Catlett, of Staunton, Va., is in a manner responsible for the plant, having discovered near Hagerstown deposits of limestone and other materials used in the manufacture of cement. The company, which has a capital stock of $50,000.00, recently elected its officers, as follows:

President and treasurer, De Courcy W. Thom.
Secretary, Loring A. Cover.
Consulting engineer, Maj. F. H. Lewis.
Directors: Douglas H. Gordon, De Courcy W. Thom, Richard H. Edmonds, Charles Catlett, Archibald H. Taylor and Loring A. Cover.

A receiver has been appointed for the Aetna Portland Cement Co., of Fenton, Mich., upon allegations of minority stockholders that a freeze-out game was being attempted by the majority stockholders.

Fire damaged the plant of the Castalia Portland Cement Co., Sandusky, O., to the extent of $20,000.00 March 29. The operation of the plant was but slightly delayed.

The Charles Warner Co., of Wilmington, Del., has received the contract for furnishing 4,000 sacks of cement to the government for work for Forts du Pont and Mott.

The Granite Cement Co., of Denver, Col., has been incorporated with a capital stock of $50,000.00 by John L. Neibergall, T. H. Kruse and I. M. De Lander.

The Kansas City Portland Cement Co. has moved its offices to the R. A. Long building, Kansas City, Mo.

The Edison Portland Cement Co. has opened a Pittsburg office in rooms 1705-6 Machesney building, with M. M. Hunter in charge. The company's plant at Stewartsville, N. J., is being improved so that the capacity will be 10,000 barrels a day.

The Three Forks Portland Cement Co. has been organized at Butte, Mont., by J. D. Slemons and F. T. McBride, of Butte, and other capitalists.

C. F. WADE, JANESVILLE, WIS.

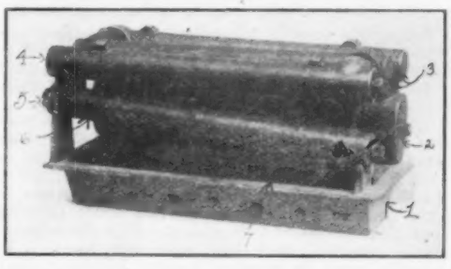
Fuel economies are among the most important problems to the manufacturers of lime and cement, plaster, and indeed the whole range of builders supplies of every character. The National Hydrogen-Burner & Stove Co., 210 Ferguson building, Pittsburg, Pa., have something entirely new in the application of intense heats of which they say:

"Our burner makes its own fuel by using two-thirds water to one-third oil, natural gas or alcohol. The heat produced by our burner is intense and can be used with great economy in any stove or furnace that has a fire box. There is positively no danger of an explosion as the gases produced by it have an outlet at all times.

"The burner is composed of cast iron pipes and sizes are made according to the size of the furnace under boiler in power plants or for domestic use the burner is made as per size of fire box in stove or residence furnace. The entire burner and fire is regulated by one valve. (The oil or gas valve which ever may be in use.) When the oil or gas heats the burner the water feeds into the generator and when gas or oil is turned off the water ceases to flow. The water at all times stands in generator and when generator is heated, the water is turned into steam and rises into the superheating pipes. These superheating pipes turn the steam into a dry hydrogen and oxygen which mixes with the gas or oil and comes out of the burner a perfect gas. It has been tested and found to make an intense heat with a smaller cost than any kind of coal or gas. Where gas is being used at present the cost of it can be greatly reduced by using our water burner in connection with the gas. It goes without argument that there is absolutely no smoke connected with our device and therefore gives manufacturers and others a chance to avoid the difficulties usually met on account of the smoke nuisance."

J. F. Townsend, of Akron, Ohio, is purchasing the machinery for the Chanute Portland Cement Co., who are constructing a cement plant at Chanute, Kas.

A Portland cement mill is to be erected at Rapid City, Ia. L. Stanhope has the contract for the erection of the plant.



1. BURNER PAN. 2. WATER GENERATOR. 3. SUPERHEATING PIPES. 4. HYDROGEN GAS MIXER WITH OIL. 5. OIL PIPE. 6. MIXER. 7. BURNER PIPE.

Concrete.

As to the Trade Schools.

That wonder of antiquity, that we read about in Holy Writ, known as the Tower of Babel, becomes all the more interesting as we take up the study of the modern skyscrapers. The greatest tower ever undertaken by the early Chaldeans according to the best authorities was abandoned when less than 200 feet high on account of the confusion of tongues amongst the workmen. This difficulty, by the way, seems to have been overcome to a great extent, for it is nothing out of the ordinary in these days to have fifty-seven varieties of foreigners laboring on the same job. In fact, it is quite the rule upon every large structural undertaking to have a confusion of tongues among the laborers, for the reason that there doesn't seem to be enough of those that know how to speak King Ed's English to go around.

If the foreign laborers who can not speak English were cut out of all the construction and engineering work there would be little progress recorded from year to year. With the help of the elevator and the telephone variously applied the modern contractor and engineer carries his building with ease to more than twice the height of the ancient tower in spite of the confusion of tongues. It was easy for us to all see how this is accomplished, but when we take into consideration that more than 90 per cent of the men who are employed upon structural work of all kinds have never regularly learned their trade, or even had the benefit of the most rudimentary instructions about their own particular line of work, it seems wonderful indeed that anything approaching correctness can be obtained. Probably the reason why we can make radical changes in the fundamental theory of construction or at least apply new methods and materials to establish principles, is because the laborers employed know as much about the one as the other, which is practically nothing in both cases.

The responsibility of the architect, the superintendent, the contractor and the producer of materials increases in the same ratio as this ignorance on the part of the workmen predominates. The employment of trained workmen carefully instructed in both the theory and the practice of the various branches of building work is an ideal condition that we are rapidly approaching. The establishment and support of trade schools is up to those interested in the structural industries who are the most responsible. The totally unprepared workman is already drawing the full pay of a man who is supposed to know the handicraft at which he is employed.

The large percentage of poor, mean, unskilled, disreputable work now being fostered on the public and paid for by the public, must pass away. It can only be done by means of well directed effort and properly applied teaching by means of the trade schools which are beginning to be developed in some of the leading American communities. The idea must be developed further so that every community will be in a position to supply skilled workmen in the various building lines capable of instructing their more unfortunate brethren and contributing the element of skill and preparedness for the work that must be done.

Installing Gas Engine.

LYNDONVILLE, N. Y., April 15.—Thomas H. Nie is installing a gasoline engine to operate his concrete mixer and is keeping two men busy making cement blocks, brick, veranda piers, fence posts, etc. He says that some time in the future he will add more modern machinery and will develop a gravel pit. He will need more capital and may organize a company.

Concrete Blocks Stand Fire Test.

NASHVILLE, TENN., April 19.—Fire breaking out from some unknown cause in the five-story building occupied by Montgomery & Co., furniture dealers, at the corner of Fifth Avenue and Union streets, threatened for a time the entire business district. The fire entirely gutted the upper story and roof. This building was erected about one year ago by the Granitoid Construction Co., of this city, and is considered to be one of the handsomest business structures in Nashville retail district. It is built of two-piece concrete blocks made by the Granitoid people at their plant under hydraulic pressure by what is known as the American hydraulic system. The composition of the blocks is crushed limestone and granite screenings and Kosmos Portland cement.

The favorable test sustained by these blocks in an actual conflagration has resulted in this type of building construction being seriously considered by people contemplating the erection of similar buildings. Heretofore concrete blocks have been looked upon with suspicion if not with disfavor, but the result of this fire has proven that such blocks as used in this building at least possess qualities that are worthy of being specified as fire-resisting building material of the first rank, which means that they will certainly be specified to a greater extent in the building operations of the future.

At one time during the fire the upper walls of the building as well as the concrete ornamental cornice and top courses were almost at a white heat, at least they seemed to be transparent, but after the fire was over and the building was approachable it was discovered that notwithstanding the great volumes of water poured upon the concrete walls while in such a heated condition, little or no damage had resulted except for a few chips in the sills of the windows and the blocks next adjacent to such openings. The walls were intact. The chipping of the blocks so exposed to the terrific heat in direct contact with the flame for more than an hour is a mere triviality and can be repaired or replaced at slight expense.

As a fire test upon concrete block, the results of such a conflagration is sufficient to demonstrate the splendid fire resisting qualities of concrete blocks made of the materials that were used in the construction of this buiding. A little over one year ago a brick building occupied the present site of the fire last night. It was known as the Manix building. The brick walls were crumbled to such an extent that they had to be removed and the present structure of concrete block, one of the first business buildings of its kind in Nashville, was constructed on the lot.

The fire started in the rear of the building and for a time the conflagration raged so furiously and so intense was the heat that for nearly an hour the firemen were compelled to abandon the fight and devoted their time to saving the surrounding property. The building was stocked with highly inflammable material being occupied as warerooms by Montgomery & Co., furniture dealers. While the loss sustained by them is great, Mr. Kirkman, the owner of the building said last night: "The building was valued at $35,000, but in my judgment the damage will hardly amount to $8,000, and is fully covered by insurance. 'It's an ill wind that blows no one good.' The truism of this old saying has been verified in the burning of this building, as it has demonstrated to me the high value of concrete block construction, and in the future I will use this material altogether."

There are perhaps more restrictions with regard to the construction of buildings in the Nashville ordinance than in any Southern city, and J. R. Hodge, the building inspector and an able and well-qualified expert of no little experience, after a critical and careful examination of the walls, has pronounced them sound. This means that the concrete block walls will not have to be torn down because the action of the fire has impaired their structural value in no way whatever. The Granitoid Construction Co. have already been retained by the owner of the building to make the slight repairs occasioned by the chipping of window sills and a few of the blocks next to the opening. R. E. Morris, of the Granitoid Construction Co., when seen at the Capitol today, was greatly pleased over the condition of the walls and the successful way in which they withstood this practical fire test.

The Mississippi Sand Co., of Alton, Ill., has been incorporated with a capital stock of $5,000.00 by Albert L. Richards, George A. Darling and John B. Bassett.

BUILDING OF MONTGOMERY & CO., NASHVILLE, TENN.

Reinforced Concrete in Keokuk.

The first reinforced concrete building to be completed at Keokuk, Ia., is the new wholesale grocery house of the Kellog-Birg Co. This is an old and wealthy firm that has built up a large business and amassed a fortune at Keokuk and the building which has just been completed was started just one year ago. H. E. Ratcliff, of Keokuk, is the architect and John W. Young was awarded the general contract for the construction of the buildings.

The building covers four city lots and is absolutely fireproof as all the structural members are of reinforced concrete. The walls are finished with colonial brick with elaborate Indiana limestone trimmings. The total floor space is at 72,552 square feet and the exact measurement on the ground is 109x130 feet. The bill for materials on this job was as follows: The combination walls consumed, 2,000 perch of crushed stone, in making the concrete and 600 barrels of Portland cement, 340 yards of sand and five cars of Indiana limestone was used for facing that part of the foundation which extends above ground. There were used in the building for reinforcing purposes 286 tons of Ransome twisted steel bars. In the superstructure the concrete used up sixty-seven cars of crushed stone, 4,550 barrels of Portland cement, ninety barrels of lime and thirty barrels of mortar coloring. There were 140,000 face bricks used in the exterior finish and five car loads of cut Indiana limestone trimming. Twenty-one tons of plastering material were used to finish the inside of the offices and warerooms of this building.

When the big grocery concern took charge of their new home they gave an elaborate house warming, which consisted of a banquet at which the architect, H E. Ratcliffe, and the general contractor, J. W. Young, were the guests of honor. All the members of the Kellog-Birg Co. and every employee of the company participated. This magnificent business building has brought concrete construction into popular favor in all the territory surrounding Keokuk, where the commercial interest of this concern is felt.

Rebuilding Kingston.

With reference to the late earthquake and fire, Vice Consul W. H. Orrett, of Kingston, reports that although the catastrophe was naturally in every respect deplorable, yet it has taught the people of Jamaica invaluable lessons in building construction. Mr. Orrett writes as follows on building plans:

While the magnitude of the disaster can not be compared to that of San Francisco in the number of buildings destroyed or the money value generally, yet I venture to say that in proportion to its size the loss in Kingston has been greater, and the government very wisely has under consideration a building law which aims at a uniform class of reconstructed buildings to more readily stand the violence of nature or fire, and it would appear that steel with reinforced concrete will play an important part in this reconstruction of the principal business houses and banks, so that the present would, in my opinion be an opportune time for American steel, iron, and cement manufacturers who make a specialty of such work to do some preliminary work in exploiting the situation.

The citizens having appealed to the British government for an imperial loan of some $5,250,000.00 to be used for reconstruction purposes, I take it that if it is granted very stringent provisions will be made in its application, so as to insure buildings being erected as earthquake and fire proof as possible so as to safeguard the loan or grant; hence it is obvious that these buildings will be constructed principally of steel and reinforced concrete, and thus American manufacturers, from their proximity to this island, should, in the matter of freight and passage of skilled workmen, etc., have a very material advantage over European competitors. There will be an abnormal demand for builders' hardware, cement, lumber, structural iron or steel, etc., for the next three years or more, and it will pay the American producer to study the field.

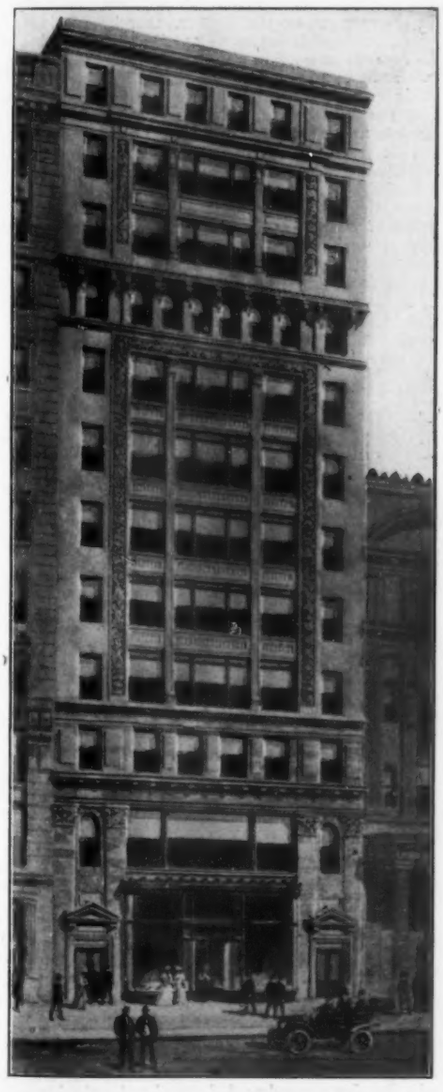
First "Monolith" Building in New York.

Although forty-two story office buildings, lofty towers and majestic cathedrals, now in process of construction, will soon rear their proud heads among the clouds and excite the wonder of the layman, there is probably no structure watched with such keen interest by contractors, engineers, architects and property owners as the "Monolith," a twelve-story office building constructed entirely of concrete and now rapidly nearing completion in the heart of New York's great shopping district. Samuel Green is both builder and owner of this unique structure, and as a result of his aggressiveness in taking the lead in such a venture stands as one of the first among concrete contractors.

The "Monolith" is the first building of importance in New York to be constructed entirely of concrete, and readers of ROCK PRODUCTS, who have learned through these columns how difficult it has been to make headway in concrete construction in New York, on account of many restrictions, will realize what an important step Mr. Green has taken and will willingly give him credit for doing much that will undoubtedly mean the advancement of the industry, both there and elsewhere.

The building will be numbered 43-45 on West Thirty-fourth street, where it has a frontage of fifty feet, and extends all the way through to Thirty-fifth street where it is thirty feet in width and will take the numbers 62 and 64 West Thirty-fifth street. As its name implies the "Monolith" is monolithic in construction throughout.

Thirty-four huge concrete columns set perpendicularly at equal distances in the walls form solid and massive supports and give additional strength to the walls in which they are imbedded. These columns which are about twice the thickness of the walls themselves, can be likened to huge fence posts we often see supporting a high board fence. These columns not only reinforce the walls of the building but also forms the supports for the concrete girders which support the floors. These girders running from gable to gable take the place of steel beams used in ordinary structures. They are imbedded in or grafted onto the perpendicular columns in such a way as to make the entire concrete "framework" one strong mass.



THE "MONOLITH," 43-45 WEST 34TH STREET, NEW YORK. CONSTRUCTED OF REINFORCED CONCRETE. SAMUEL GREEN, BUILDER.

The floors are made by constructing false work by means of laying planks from girder to girder upon which tile is placed. Over the tile is poured a thin coating of cement to insure the proper bonding. Then about four inches of rough concrete is poured on after which a finish of concrete about two inches in thickness is applied. In this way a ceiling to one story and a floor to the one above is completed at the same time.

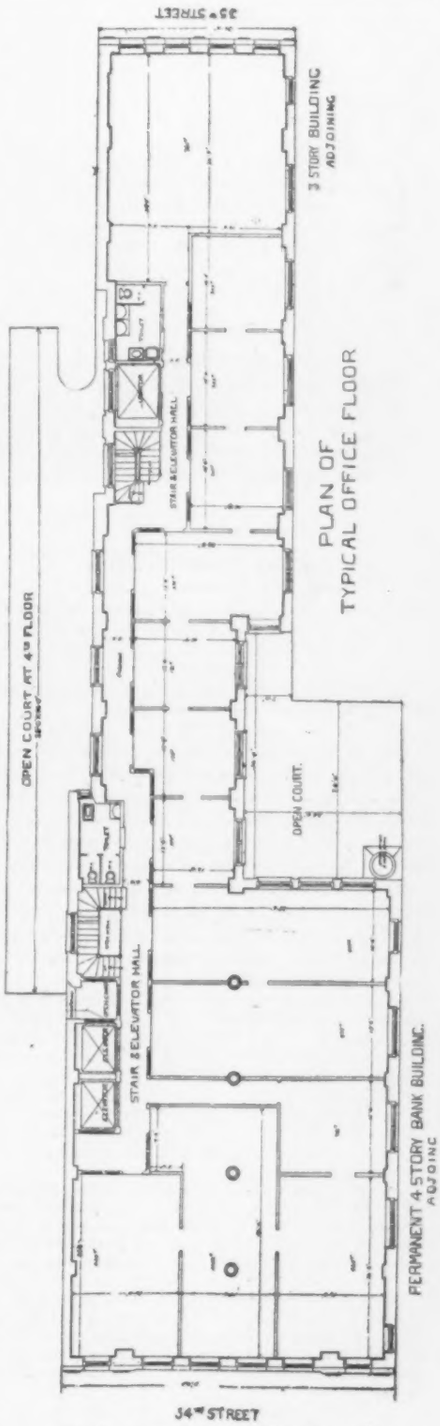
The perpendicular columns in the walls, the walls themselves, the horizontal girders and the floors are strongly reinforced with reinforcing bars and tightly grafted together into a good cement bond and make a mass of incomparable strength and durability.

Mr. Green, the builder, in a personal interview with a representative of ROCK PRODUCTS, said: "We began work on the "Monolith" August 22. The winter proved to be severe and as we have been unusually careful regarding all weather conditions we were greatly delayed in the work of construction. Some of the delays might have been unnecessary but I wanted to be on the safe side and would rather go slowly and carefully in work of this kind than err on the side of too much haste. For instance, we kept the forms on some of the upright columns in the building fully four or five weeks. Unless we were assured by the weather bureau that the temperature would remain above 34 degrees for at least forty-eight hours we would not attempt to work with the concrete at all. Also before taking the forms from the concrete we heated it with live steam for at least four days so as to keep the temperature up while the cement was setting and not take any chances at exposing it to the weather.

"The main point in my mind during the work of construction has been the matter of safety. We used every precaution and nothing has been done in a rushed manner. The value of property here is high and we could not afford to make anything but a thorough job, and in addition to this we knew that the slightest exception taken to our rules in the work would meet severe criticism on all sides by engineers and builders.

"While, as I have said, we took the greatest care in construction, there were warm spells occasionally through the winter which allowed us to note with what speed concrete work of this kind could be accomplished. During a spell of warm weather in January we completed two stories in fourteen days thereby competing with the rapidity of steel construction. At another time we poured the side walls of an entire story 200 feet in length and 11 feet in height in four hours after the forms were made. This was all done with labor costing $3.00 a day against the bricklayers at $6.00. However, concrete work in New York is really more costly than brick and steel construction, as the money saved in using concrete is more than expended in paying carpenters to make the necessary forms. Crushed stone is also still high in New York and is a great factor in the cost of concrete. As the result of this experiment we are organizing a company which will make a business of erecting concrete structures."

The Thirty-fourth and Thirty-fifth street fronts of the "Monolith" will be veneered with granite up to the fourth floor and above this the building will be finished in ornamental concreted stucco work, the decorating of which will be done on the concrete surfaces by hand. The owner of the building states that the Board of Underwriters have rated this building lower than any other structure of its height in the city, and he advertises the fact that insurance rates will be lower in his building than elsewhere. It is attracting not only the attention of engineers, architects and builders of this and other countries, who have personally visited the site, but as is proved by the number of tenants already secured, it is also being noticed by many interested in building in a more indirect manner. The "Monolith" will be ready for occupancy shortly after May 1. Vulcanite Portland cement was used in the structure throughout.



TYPICAL FLOOR PLAN, THE "MONOLITH."

New Plant in Lehigh Valley.

ALLENTOWN, PA., April 16.—The Allentown Portland Cement Co. will commence building next month. The plant will be located at Egypt near the Lehigh and American plants. There will be about three-fourths of a mile of track to be built connecting the plant with the main line of the Reading railway. The property consists of eighty-three acres of cement rock and seventeen acres of limestone, which has been tested and found to average 94 per cent pure carbonates. This of course includes the building site. The plans for the plant have already been adopted and the real work of construction will start soon. The plant will have a capacity of 4,000 barrels of Portland cement a day.

RECLAIMING WASTE SPACE BY CONCRETE CONSTRUCTION. TWO VIEWS OF FIRST FLOOR OF BRYANT PAPER CO.'S MILL AT KALAMAZOO, MICH., SHOWING HOW BUILDING WAS ERECTED OVER TWO STREAMS. ARCH IS 32 FEET ACROSS.

Cement Concrete Roads.

BY WALTER E. HASSAM, C. E. M. S., PRESIDENT OF MASSACHUSETTS HIGHWAY COMMISSION AND FORMER STREET COMMISSIONER OF WORCESTER.

(This article will appear in Bulletin No. 14 of the Association of American Portland Cement Manufacturers.)

How to obtain good roads and good streets is, at the present time, one of the most perplexing questions that is brought to the attention of engineers, street commissioners, state highway commissioners and the public who are directly interested in good streets. In order to have an ideal road or street it must be sanitary, durable, noiseless, smooth, but not slippery, easy to repair, dustless, and last, but not least, it must be built at a cost that will appeal to the taxpayer, who is to furnish the cash for all public improvements.

Next to steam railroads, measured on money invested, street pavements are the most important of any class of construction. A conservative estimate of the annual expenditure in cities of six thousand (6,000) or over, is fifty million dollars ($50,000,000). In spending this large sum of money for streets, it should be the aim of every one interested, to obtain the ideal street. If all the points can not be obtained in one, then the one with the largest per cent should be built.

Asphalt, brick, bithulithic, wood blocks and Belgian blocks you are more or less acquainted with, and I will not take up your time discussing these. In 1896, eleven years ago, the city of Worcester, Massachusetts, commenced laying stone block paving on a concrete foundation, filling the joints with crushed pea stone and grouting with a mixture of cement, sand and pea stone, brooming the whole surface and leaving about ⅛ in. on top, completely covering the blocks. This covering wears off after about six years heavy traffic, but shows no joints for germs to collect in.

This pavement, after comparing with the others, seems to have more good points than any of the rest. It is sanitary as there are no joints—the weather does not affect it—it can be flushed and kept clean—sprinkled and kept dustless without injuring the pavement—smooth, but not slippery—is laid on a 9 per cent grade—durable, as not a cent has been spent on repairs in eleven years, but the first cost is large. This is due to the large cost of dimension stone and the high price of labor to lay them.

Realizing that concrete should be rigid and monolithic in order, not to be perceptibly affected by either heat or cold, the writer found by experimenting that this could be done and that the excessive first cost could be overcome with practically the same results as with the expensive stone block, by laying the street in the following manner, thereby adding another point to the ideal street.

The street is first excavated to the proper subgrade, which, for ordinary street paving, is a depth of six inches from the finished grade. This subgrade is thoroughly rolled; then broken stone, of the egg size, is spread to a sufficient depth, so that after rolling, it will be two inches below the finished grade of the street.

This foundation stone is rolled or compressed, until thoroughly compact, and the voids reduced to a minimum. It is then treated with a grout, composed of one part of cement, to four of sand. This grouting and rolling is continued until all the voids are completely filled. This process gives an exceedingly dense concrete, which is very strong.

For the wearing surface, there is spread upon the foundation, before it has set, sufficient stone, of one inch size, to bring the street to the required grade after rolling. This stone is firmly rolled or compressed, until embedded in and united with the foundation. Then it is given a thin grouting of Portland cement and sand, mixed in the proportion of one of cement to two of sand. The voids are thoroughly filled with grouting, and then the surface is rolled until the grout flushes to the top of the stone. As a finish, there is then applied a thin layer of creamy cement and pea stone mixed in the proportion of one cement, one sand and one of pea stone.

This surface is poured on, brushed and rolled to an even surface. The street is then allowed to set for at least six days, when it is ready for traffic. The layers follow each other so closely that the foundation does not set until the whole is complete. When complete, the entire road is a solid, homogeneous mass of rock and cement, that will resist anything that can possibly come in contact with it. The finished surface of the pavement presents to the casual observer a smooth and fine appearance, but on close examination, it is found to be somewhat rough, enough so that there will be no slipping of horses or skidding of automobiles.

Owing to the employment of unskilled and careless workmen, for laying an ordinary concrete foundation, the mixture of stone and cement is often handled more than is necessary, and often not laid for a considerable time after it is fixed. The result is, that the majority of this kind of work is less durable than it would be if constructed under the best circumstances. Proper pavement construction consists not only in using the best and most suitable material for the purpose, but in so handling these materials in the making, that the most favorable relations of the various parts to each other can be assured, when subjected to the strains and shocks of usage.

The combined strength of the various layers of the material in the pavement are not utilized unless all the layers are in perfect harmony, as to mixture and material. Under this new method of laying concrete by experimenting, I have found that a more dense foundation can be laid than by the old method, and at a much reduced cost; the stone is not handled at all in the mixing. It is rolled in such a manner as to produce uniformity. The voids in the stone are reduced to a minimum by the rolling. The cement can be handled quickly, and the result is far more efficient foundation which is perfectly adapted for use under any pavement: asphalt, bricks, wood blocks, etc.

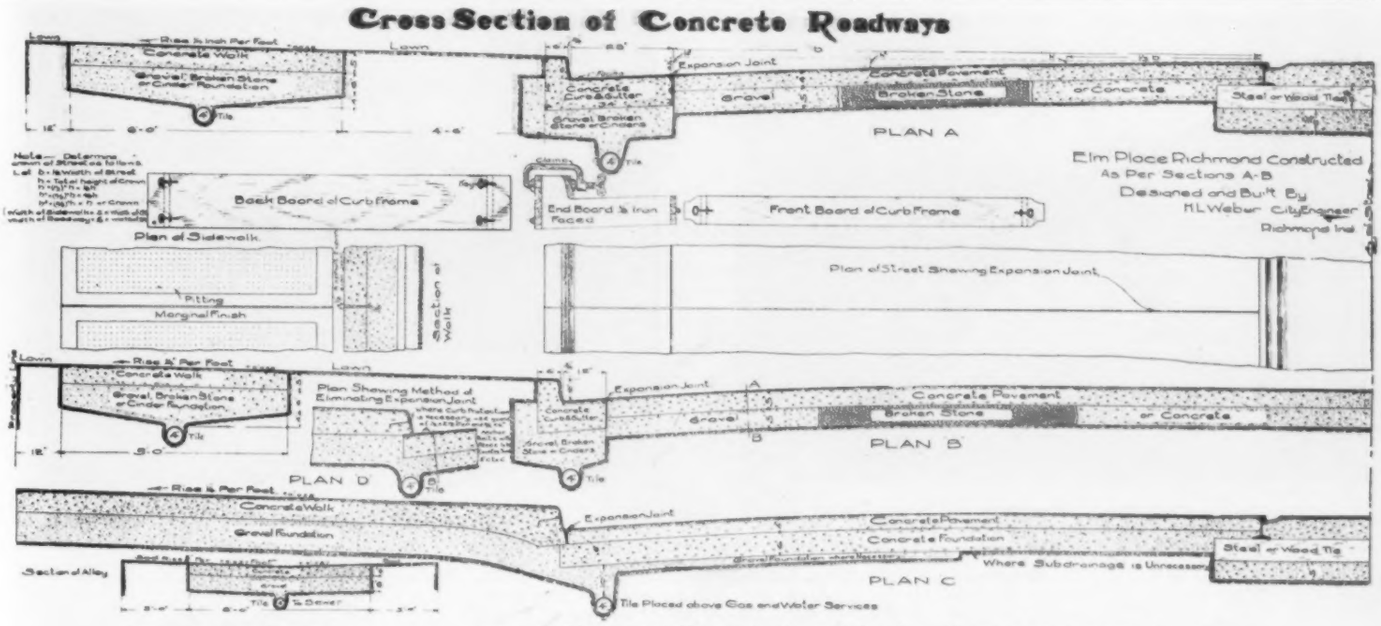
The problem confronting the state highway commissioners and engineers of the different states today is, how we are going to build state roads so they will stand the automobile traffic. They have come to stay. You can not stop them. The power being wholly on the rear wheel it grinds up the top of the road, sucking it up in a cloud of dust and the wind blows it into the adjoining field, much to the disgust of the farmer, thereby loosing the binder; the stone begins to ravel, and the road must be repaved at once in order to save it. This can be overcome by using a cement binder, it being so much stronger; the depth of the road can be reduced, so that the first cost will not be much in excess of the present method of building macadam roads.

I do not want to be understood as being against automobiles, for the owners of bicycles and automobiles have done more for good roads in the last few years than the owners of horses have in the last century. If a steel-jacketed shell is so it will pierce the armour plate of a war ship, we must build a plate that the bullet will not penetrate in order to save our ships, and it is the same with good roads. If modern conveyances are tearing roads up so they are continually in need of repairs, we must build them of something that will stand the traffic in order to save our roads. Our streets are of the same width they were fifty years ago. Traffic was light and the dirt road was good enough, but traffic has increased 500 per cent. Nothing but solid rock, or the nearest to it, will stand today. By using cement of the best quality and building roads and streets of concrete, not guaranteed; but, under the direction and supervision of an engineer, holding him responsible, I believe we shall be able to come the nearest to the ideal road that has ever been constructed.

Reclaiming Waste Ground.

A remarkable example of the conversion of a piece of waste ground into a site for a large three-story building may be seen at Kalamazoo, Mich., where the Carey Construction Co., of Cleveland, has erected a heavy three-story concrete building over two streams and their junctions, without interfering with the currents of either. The building is now occupied by the Bryant Paper Co., of Kalamazoo, and general satisfaction is expressed with the method used for reclaiming useless space. What has been done may be seen more clearly from the picture of the first floor of the building after completed. Two small streams seek a junction at the exact point where the building is set. Several dozen concrete piers were used for the support of the floors, but the water goes uninterrupted underneath. It is an example that may be well copied by other establishments which need more space and find little available. The building when completed did not show the slightest deflection. It is 82 by 120 feet in size and cost about $35,000.00.

The Newcastle Portland Cement Co., of Newcastle Pa., have purchased from the Austin Manufacturing Co. one No. 8 and one No. 6 crusher, together with elevators, screens, etc.



Concrete Roadways.

BY H. L. WEEER, CHIEF ENGINEER OF THE FORT WAYNE AND WABASH VALLEY TRACTION CO.

(This article will appear in Bulletin No. 14 of the Association of American Portland Cement Manufacturers.)

THE use of concrete for roadways is no "Pipe Dream" of the cement manufacturers; but rather an idea of the engineer. If this idea is to be carried to a successful conclusion, and the concrete roadway proven to be a practicable roadway, a great deal depends upon the cement manufacturers for its success by furnishing the engineer good cement, as well as upon the practical engineer. I believe and have believed for a number of years that concrete would make a good roadway and to prove my ideas upon this subject have built many short sections of street, alley and court driveways at Richmond, Ind., which have given the best satisfaction. Concrete for foundations is used under almost all kinds of roadways and many of these foundations are the only redeeming feature of the roadway. If these foundations should be a redeeming feature, why not entirely redeem it by placing thereon a concrete roadway surface? The only reason that can be offered for not having done so before is, that we never thought of it, I will be honest with you, "didn't know it." We were from Missouri, had to be shown, but since you fellows have found out you can make Portland cement in this country, we have learned a few things also; that we can build houses, bridges and culvert arches by reinforcing concrete; in fact, use it in almost any and every class of structure that wood, iron, stone or brick enter into; then why not in roadways?

It is possible to use concrete in the construction of all roadways, but it may not be wholly practicable. It has its faults as well as its good qualities, and one of its faults is expansion and contraction; other materials have them also. Another is that it takes too long to get hard enough before it can be used, which is its greatest fault for street construction purposes. When it does get hard, "it gets hard," which makes the property owner sing its praises; but how about the poor gas man, water works man, plumber, telephone, telegraph and street car man, who always have "their pick" out ready to tackle every newly made street, to fix the things that should have been fixed before the concrete pavement was put down. There is nothing left for these poor men to do but to chop out the concrete, crush it, save it with care, and do as the poet directs:

Take a lot of the crushed pavement and gravel,
  A little cement and sand,
With water as another ingredient,
  Abstracted from the land.
Then thoroughly mix, ram and trowel it
  Before you go away,
Then you can boast you have a pavement
  That will last for many a day.

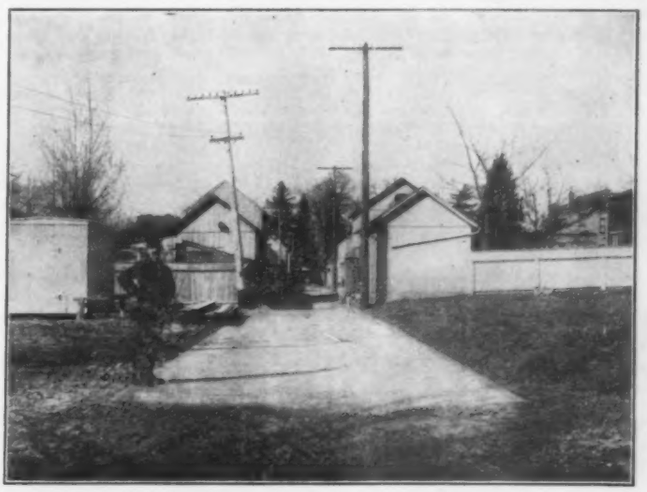
Then others will come with picks and smite it
  To lay a water main;
And then they call the workmen
  To put it back again;
To run a street railway through
  They can take it up once more,
And then they can put it back again
  Just like it was before.

They can take it up for conduits
  To run the telephone;
And then they can put it back again
  And it will get as hard as stone.
They can take it up for wires
  To feed the electric light
And then put it back again,
  Which is no more than right.

Concrete pavement will not furrow;
  There may be patches everywhere,
You'd just love to ride upon it,
  For it's a pleasure very rare.
It's a very handsome pavement;
  A credit to any town;
Although they're always digging of it up,
  Any one can put it down.

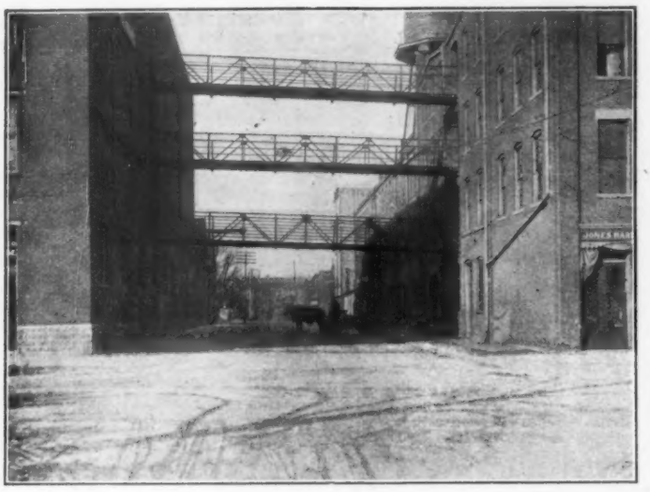
In this line, then, there are advantages as well as disadvantages in the concrete roadway. The expansion and contraction must be taken care of, and this I believe can be done very readily and cheaply. In all the northern latitudes good sub-drainage is one of the first requisites. Not that water is detrimental, not at all; it is beneficial; but the upheaval tendency of the frost must be guarded against in this as well as other kinds of pavements; therefore the springs should be drained and water prevented from getting under the pavement, which can be done by side drain-

CONCRETE COPING, CURBING, WALK, GUTTERS AND CROSS WALKS RICHMOND, IND.



CONCRETE ALLEY BETWEEN 18TH AND 19TH STREETS, A TO MAIN STREETS, RICHMOND, IND.

ALLEY SOUTH OF MAIN STREET, SOUTH FROM 21ST TO 22D STREET, CONCRETE ROADWAY, RICHMOND, IND.



ELM PLACE; CONCRETE WALKS, CURB AND ROADWAY, RICHMOND, IND.

age under the curb, as shown by the cross sections, Otherwise lay the concrete directly upon the sub-grade.

I have treated the subject of building the concrete roadway in a set of general specifications. It is a great task to write a set of specifications fixing the proper proportions of a concrete and to cover all local conditions, for the simple reason that a fixed proportion will not answer for all classes and grades of materials. The making of a good concrete is a very simple matter, and yet, like all simple engineering operations, there is a right and a wrong way of doing it. The many failures in concrete works can, I believe, be charged to improper proportioning and mixing more than to any other cause. The matter of correct proportions requires a careful study of the materials proposed to be used.

In building the concrete roadway, it is necessary to have your specifications elastic. Why? So they will cover all grades of materials liable to be encountered, in order to obtain the best results, in both strength and cheapness, that can be secured. I think it well to specify in a general way about what proportion of cement, sand, gravel or stone you propose to use, which you can come very close to by testing your materials for voids. This will give the contractor some idea of your intention and the class of concrete you propose to make. Then add a clause like this: The intention being to make a concrete of such consistency that when thoroughly mixed, deposited and rammed to place shall envelop every particle of sand with cement and every particle of gravel or stone with mortar; this result to be obtained to the entire satisfaction of the engineer, regardless of the proportions above specified.

The only great question that arises in the matter of concrete roadways is their maintenance; that is, how to repair them should it ever become necessary to do so. If they never wear out the question is settled; if they do, how do you propose doing it? There is only one way as I can see, take it up, run it through a crusher, mix more cement with it, and relay it, which, you will all concede, will not be as great an expense as one might at first suppose. In order to reduce this cost I propose to lay the foundation as you would for any other kind of pavement; make the wearing surface from three to five inches thick as the case may demand. This surface can be placed the same day the foundation is put in, say by following after, from three to five hours, making the process a continuous performance. The top three to five inches of concrete, including the one-inch of surface finish, should be rather a wet concrete, the first three or four inches not so wet as the last one inch on top. The top one inch should be put on in two layers, the first slightly in advance of the finishing gang. The scheme is to make this whole layer of pavement or coat one homogeneous mass, in blocks reaching from curb to curb, and in stretches sixteen to thirty-three feet in length. At the sixteen or thirty-three foot points, guide strips of the same cross section as that of the street can be placed, made of 3 x 4 inch or 4 x 4 inch timber, as the case may be, faced with an iron runner strip, upon which to place the straight edge; or if the curb is constructed first, a half cross section crown board can be used, using the curb for a runner support in connection with a strip placed in the center of the street. Rollers or wheels on curb end of crown board will make it run with greater ease, and a true street surface can be obtained.

As the work of the concrete pavement develops, you will find the expert workman in this line coming forward who will not need any of this paraphernalia; but who will form the street as the other people, the "Asphalt People," form theirs. The thing that is really essential is the form at the end of each section of thirty-two feet, where the expansion joints occur so the faces and edges are made true and hard, to prevent the chipping off at these points. All unnecessary joints and seams should be avoided. Where there are street railway tracks down a street they afford an excellent arrangement for the running board in connection with the curbing in forming the street surface.

The secret, "the things we tell other people to keep for us," about constructing a concrete pavement is, to get a surface that will not be slippery when laid, and will not wear slippery with usage. To overcome this I would use a coarse sand one part, granite or stone screenings, one part, and cement one part. If you could practically add to this, small crushed stone or granite not to exceed one-half inch cubes, and ram it into the top layer, making the pavement in a sense a mosaic pavement, it would undoubtedly add to its life. I have yet to demonstrate the practicability of this scheme. After the top finish is put on, the surface formed, and initial set taken, float to even surface, steel trowel to consolidate, then cork trowel and leave in this condition, protected from the direct rays of the sun in exceedingly hot weather, to harden In favorable weather the street should not be opened up for traffic short of seven days.

There are several things we are pleased to call the "small essentials" that should never be lost sight of in constructing the concrete roadway, for it is the small things left undone, that ruin the whole structure. Do the little things well and the big things will take care of themselves. The "little essentials" that should be well done in making a concrete pavement are, first, secure a good foundation; the sub-grade should be carefully and uniformly made; drains placed where needed; second, the materials should be selected with care as in other important work; because it is street work it should not be classed as cheap work by any means. The most uniform strong cement should be used, preferably a quick setting cement if of good quality. The stone and gravel should be hard but not flinty for the surface wear; for the other portions it makes no difference about the flinty nature, but it should contain no loam or foreign matter, and be of various sizes. The larger should pass through a one-inch ring. The sand must be clean, sharp and preferably graded in sizes from fine to very coarse grains. The screenings of stone or granite should be free from all foreign matter. The pure stone or granite sands are preferable, in due proportions. The water should be fresh and clean, free from dirt, sewage and oils. Third, uniformity in the mixing of concrete makes expansion alike in all parts of the mass, under like conditions, thereby lessening the liability of cracking and checking. Therefore, to obtain a uniform concrete, thorough mixing is essential and machine mixing preferred. Fourth, deposit the material as soon as mixed, ram to place and finish as rapidly as the setting will permit of, and I will guarantee your work a success.

If we are to lay the concrete roadway upon a concrete, stone or gravel foundation, then we can do so as shown by plans of the several schemes submitted. Why not lay it the same as any other pavement is laid? If a cheap street is desired, upon a gravel or stone foundation, I can see no reason why we should not do so, and in many places and under many conditions it would be economy and practicable to do so. The Elm Place roadway at Richmond, Ind., is laid upon an old gravel road foundation about six inches thick. The concrete roadway is six inches thick, including the top finish. The concrete is made of one part Medusa cement and eight parts gravel in which the sand was about equal to three parts and the gravel six parts, and graduated from fine to coarse, the coarse gravel not exceeding one and one-half inch cubes. The top finish was composed of one part cement, one part sand, and one part limestone screenings, constructed as set forth in the specifications, with the exception that it had a total depth of six inches and was laid on a gravel foundation. This improvement, including all labor and material, also the curbing and sidewalks, of which A. & D. is a true representation, cost 13 cents per square foot. The letter of Fred R. Charles, city engineer of Richmond, Ind., gives you some valuable information in regard to the cost of cement roadways in that ctiy. All this work has been done with a good quality of both bank and river gravel and sand, costing from 75 to 85 cents a yard delivered upon the work, labor, common, 15 to 17½ cents an hour, skilled finisher, 30 to 40 cents an hour. Also the letters of the Jones Hardware Co., Joseph Ileff, and Dr. W. W. Zimmerman, ex-mayor, are submitted.

Cement Walks, Curb, Gutters and Roadways.

GENERAL SPECIFICATIONS.

Section 1. The contractor shall furnish all the labor, tools and materials necessary for the completion of the cement walks, curb, gutters and roadways and accessories as herein specified; also furnish all labor and materials required for protecting and repairing adjacent structures, maintaining public travel on the street or intercepted roads, walks and streets; all labor and materials required for any of the operations, principal or collateral, mentioned or implied herein. All materials and labor shall be subject to the inspection and acceptance of the engineer and superintendent in charge.

GRADING.

Sec. 2. Excavate to the full depth and width as shown by plans, cross-sections and profiles. At the completion of the work both edges of all walk shall be backed up so as to preserve the walk and present a neat appearance. The lawn space between the walk and curb shall be graded to conform to the walk and curb grade, covered with fine material suitable for growing grass, raked off and left smooth.

SUB-DRAINS.

Sec. 3. Sub-drains shall be laid of .... inch common drain tile, ... inches below the sub-grade as shown by the plans. The tile shall be laid to a true grade and line, with close fitting joints with clean

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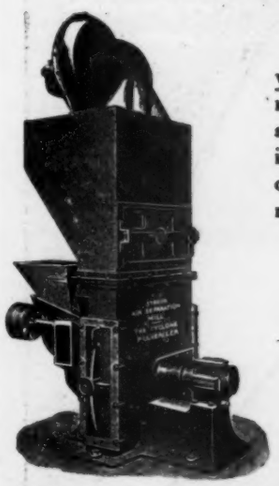

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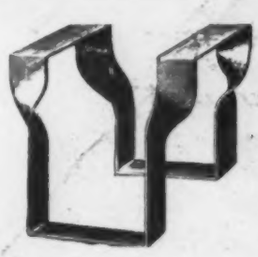

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Vol. II October, 1906 No. 11

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Circulation 10,000

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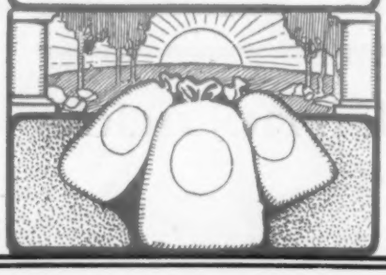

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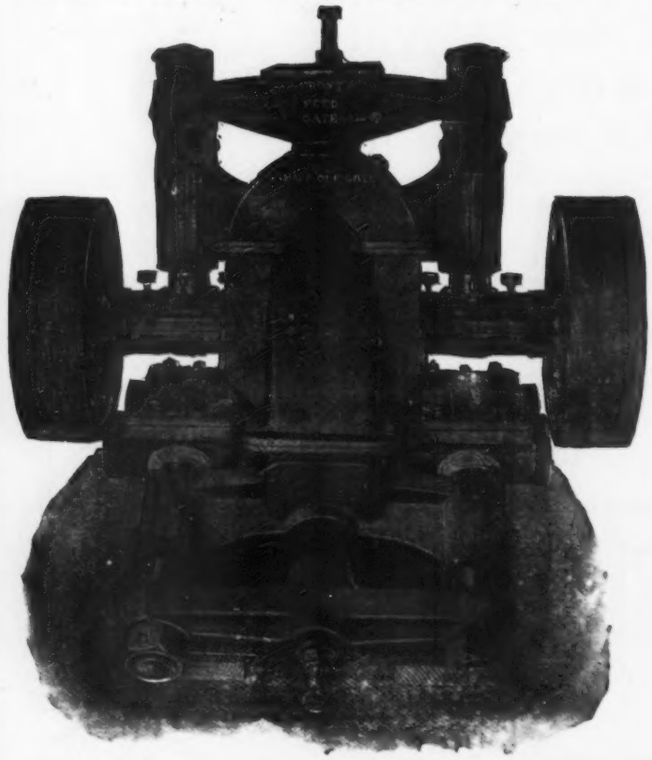

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gravel or crushed stone packed around and over them to the top of the trench. The tile shall be connected to such outlets as the engineer may determine. All junctions to be made with "Y" and "T" branches, and all deflections with curves of vitrified sewer pipe.

TREES, ROOTS, ETC.

Sec. 4. Trees shall not be injured, but roots of trees, which in any way interfere with the construction of the walk and its maintenance in proper manner, shall be cut away as the engineer may direct. The pavement shall be properly fitted around all fixtures in the walk.

RELAYING OF OLD WALKS.

Sec. 5. Where the material in any walks that now exist on the street shall be acceptable to the Board of Public Improvement or other bodies in authority, they shall be taken up and relaid to the grade and line now established; the price therefor shall be force account plus 10 per cent, as determined by the engineer.

WALK AND CURB FOUNDATION.

Sec. 6. Upon the sub-grade, prepared as shown by the cross section and as above specified, there will be placed a six-inch layer of rubble, or field cobble stone, the refuse of quarries, old bowlders taken from the old bowlder curbing (if too large they shall be broken if used), coarse gravel, cinders or crushed stone. Upon this layer shall be placed sufficient gravel to fill the interstices, and form a foundation with a total depth of six inches, after being leveled off and settled by flooding and ramming. Upon this bed will be placed a layer of good, clean gravel, two inches in depth, to be properly spread, packed and smoothed, to receive the concrete.

CONCRETE.

Sec. 7. Upon the foundation place the concrete, .. inches thick after being thoroughly rammed; it shall be uniformly one inch below the finished grade. Facing shall be placed next to the templets forming the curb or walk, backed up with concrete thoroughly rammed to place. The concrete shall be composed of one part cement, two parts sand, and five parts gravel; the gravel can contain the sand, or one part cement, two parts sand, and five parts crushed stone of various sizes, from 1 in. down to fine screenings, preferably crusher run with the dirt removed. If hand mixed, the proportioning of the materials shall be done by placing a templet of the proper size upon a platform and placing therein the sand, gravel or stone by actual measurement in the proper quantities, leveling off the form with a straight edge; over the top evenly spread the cement; remove the templet, turn the mass at least twice, or until it is thoroughly mixed, add clean water from sprinkler and thoroughly mix to make a concrete of such consistency that when deposited and rammed to place shall envelop every particle of sand with the cement, and every particle of gravel or stone with mortar. This result must be obtained to the entire satisfaction of the engineer. Machine mixing preferred, but proportioning must be done by actual measurement.

The concrete shall be laid in blocks of the following dimensions: ....for....foot walk; .....for .... foot walk; and .....for ....foot walk, with expansion joint separated by two pieces of three-ply asphalt paper, at each 33 feet of line, intermediate joints cut through as the engineer may direct.

WEARING SURFACE.

Sec. 8. Before the concrete has set, deposit the wearing surface which shall be one inch in thickness, composed of one part cement and two parts clean, coarse, washed sand, if the nature of the material require it; or one part cement, one part sand, and one part clean, crushed stone screenings. First mix thoroughly in a dry state, then add sufficient clean water, and thoroughly mix into a medium soft mortar. Deposit this upon the concrete and trowel down to insure a perfect contact, leveling with a straight edge from the grade strips. When sufficiently hard, float and trowel to a smooth continuous surface. Avoid dusting the surface with dry cement.

The surface, except a marginal draft two inches wide around each plate and five inches along curb line, shall be pitted with a roller acceptable to the engineer.

The wearing surface shall be cut in blocks the same size as the concrete base and directly over those joints. As soon as the work has properly set, all templets to be removed and edges plastered to the full depth of templets, if required by the engineer.

All walks shall have a rise of one-fourth inch per foot from the curb to the lot line. Strips properly staked shall be set on both sides of the walk to keep it straight, being careful that the grade and fall are correct. Any walk not properly laid, must be taken up and relaid by the contractor.

No finishing shall be done after dark.

No concrete shall be laid more than one hour in advance of receiving the top finish.

CEMENT CURBS, GUTTER AND CROSSWALKS.

Sec. 9. The cement curb, gutter and cross walks shall be constructed in place, under the direction of the engineer, on foundation as provided for in section 6. The curb and gutter or crosswalks will be composed of concrete, formed by intimately mixing, dry, one (1) part cement, two (2) parts coarse, clean sand, washed if necessary, five parts of clean, medium size gravel, or five parts of clean, screened stone, crushed to pass through a screen of one and one-half mesh, or preferably crusher run, passed over screen to remove dirt, to which add sufficient clean water to form a concrete, that when placed in the templets and thoroughly rammed, free mortar will appear on the surface. The ramming of the concrete in the forms shall be done with the proper tamping bars and other tools to insure a compact, homogeneous mass, with full square corners. The stone shall be sprinkled before it is added to the mortar. The proportions given being intended to form a concrete in which every particle of sand shall be enveloped by cement, and every particle of gravel or stone enveloped by mortar; this result may be obtained to the satisfaction of the engineer. All exposed surfaces shall be covered with a finished coat one (1) inch in thickness, composed of one part cement, one part of fine, clean stone screenings, and one part of clean, coarse sand, or one part cement and two parts sand may be used.

The facing shall be placed in the templets forming the curb backed up with concrete and thoroughly rammed to place. The top facing of curb, gutter and crosswalks shall be thoroughly troweled to insure perfect contact. When sufficiently hard, float and trowel to a smooth, true surface. The curb to be constructed with the top edge to the established grade of the street; the upper and lower face corner to be rounded to a radius of one inch. The curb shall be six inches thick at the top, and the gutter ...inches thick, and ....wide, and constructed in seven-foot sections, alternately. When the intervening sections are constructed there shall be a strip of asphalt paper placed in the joints, as the engineer may direct.

Wrought iron protections will be built in all corners and places designated.

ROADWAY PAVEMENT.

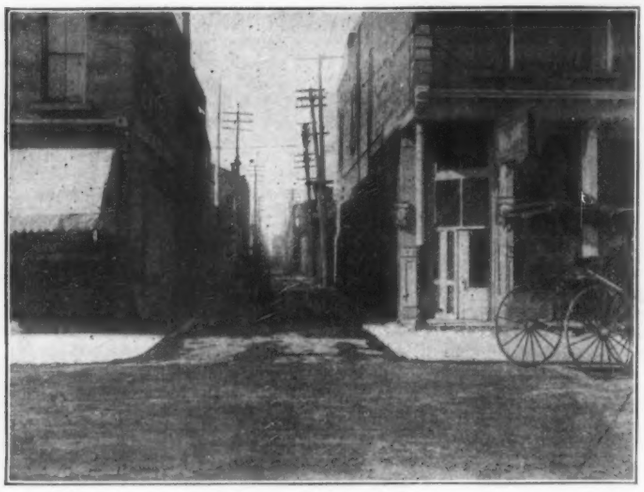
Sec. 10. The sub-grade will be leveled and rolled until it is true to grade and cross section of the finished roadway, and from 8 to 12 inches below the surface of the street, as the case may require. If found necessary for sub-drainage, tile or blind drain all springs and wet places, then upon the sub-grade place ....inches of gravel, thoroughly wet and consolidated by rolling or ramming, as the work progresses. Upon this gravel foundation will be placed a layer of concrete six inches in thickness; the concrete shall be composed of one part cement, two parts sand, eight parts gravel or stone, preferably crusher run with dirt removed, finished to true crown and grade parallel to the finished street surface and four inches below the same. This will constitute the foundation for the cement roadway.

When sufficiently strong to sustain the roadway paving, the surface of the concrete foundation will be covered with a coating of fine sand, raked off with a flatboard rake, by hand, so as to remove all sand except that which may remain in low places and voids in the concrete foundations. Or covered with a layer of thin paper, tar or asphalt, or other suitable paper or material to act as a separating joint. Upon this will be laid the concrete pavement three inches thick, in sections the full width of the street, and thirty-three feet in length, with expansion joint next the gutters and ends. At all expansion joints the finish must be made to abut against a form facing material being placed next to the form and the concrete rammed to place to form a square sharp edge. In joining on to work, expansion material or strips must be used, placing facing material next to, backed up with concrete properly rammed to place.

This roadway concrete will be composed of one part cement, two parts sand, four parts gravel or four parts crushed stone, mixed with water to form a rather wet mixture. Upon this will immediately be placed the wearing surface one inch thick, composed of one part cement, one part clean, sharp sand, and one part clean stone or granite screenings, mixed with water to form a rather wet facing mixture. The wearing surface will be deposited in two layers, one-half inch thick, the first to be thoroughly troweled to insure a perfect contact; the second applied immediately after, and thoroughly troweled and worked over, and made to conform to the finished surface of the street by the use of the proper forms. When sufficiently hard, the surface to be floated and steel troweled, and lastly, raised with a cork float,

CONCRETE WALKS, CROSS WALKS, CURBING AND GUTTER, N. ELEVENTH STREET, RICHMOND, IND.

N. ELEVENTH STREET, RICHMOND, IND., CONCRETE WALKS AND GUTTERS.



CONCRETE WALKS, CURBS AND ROADWAY, SAILOR STREET, BETWEEN 8TH AND 9TH STREETS, RICHMOND, IND.

CONCRETE ALLEY BETWEEN 8TH AND 9TH STREETS, RICHMOND, IND.

and when finished must be true to grade and cross-section. All concrete should be machine made, or thoroughly mixed by hand, as the engineer may direct.

CEMENT.

Sec. 11. The cement shall be the best American Portland, or any other equally as good or better. No mixing of different brands of cement will be allowed. Cement must meet the requirements of the Standard Specifications of the American Society for Testing Materials, and be acceptable to the engineer.

In proportioning materials the measurement shall be by volume; sand or gravel and stone measured loose as shoveled into a box, and one hundred pounds of cement shall constitute one cubic foot. All cement shall be kept in suitable houses for the purpose.

SAND.

Sec. 12. The sand shall be clean, coarse river or bank sand, acceptable to the engineer.

WATER.

Sec. 13. None but clean, clear water shall be used, furnished by the contractor. As soon as a section is finished, in hot dry weather it shall be protected from the sun's direct rays, and in dry weather it must be kept moist for five days by thorough sprinkling.

STREET CROSSINGS.

Sec. 14. Where drive ways, alley crossings, or street crossings occur in the line of walk, the walks will be made of special construction as shown by plans or as directed by the engineer. Letters shall be placed as directed by the engineer.

WORK SUSPENDED.

Sec. 15. Any work not finished in the time specified shall be discontinued for the season, upon notice from the Board of Public Improvements, and not again commenced until said board shall order the contractor to begin work. No work shall be laid in freezing weather.

STEPS.

Sec. 16. At points where it will be necessary to construct platforms, steps, or other appurtenances, along any building in order to harmonize said building to the established grade, the outside line of said appurtenances shall be....feet from the curb line, and parallel therewith, and constructed as shown by plans and detail drawing.

LETTERS INDORSING CONCRETE ROADWAY.

RICHMOND, IND., February 22, 1907.

H. L. Weber, Fort Wayne, Ind.—Dear Sir: I ordered this letter written as soon as I received yours, but find that it has not been done. I am very sorry to have kept you waiting. In answer to your inquiry, I would say that I find the cement the most lasting, economical and sanitary way of making the streets and sidewalks. It has proved a success from every standpoint, and I do not find it more dangerous than brick or paving blocks as regards slipping. With ordinary care in driving, such as anyone should use in turning a corner, it is as satisfactory as anything else. I can heartily recommend it to any municipality or firm requiring a permanent and satisfactory street. Very truly yours,

(Signed) DR. W. W. ZIMMERMAN, Ex-Mayor.

RICHMOND, IND., February 8, 1907.

H. L. Weber, Fort Wayne, Ind.—Dear Sir: The cement street in the rear of this building that was constructed by you is one of the best improvements this city can boast of. It is a practical, sanitary, and in fact, will probably be a good street when the rest of them are gone. I have talked to several teamsters and horsemen, and they say that there is no more trouble from slipping than on any other street, and it is really not so dangerous as brick. It is the cleanest street we have. Yours truly,

(Signed) J. P. ILIFF.

RICHMOND, IND., February 13, 1907.

H. L. Weber, Fort Wayne & Wabash Valley Traction Co., Fort Wayne, Ind.—Dear Sir: Replying to your circular letter of the 7th regarding cement street, which was put in for us three years ago under your specifications and supervision, we beg to advise that this street is used a great deal for heavy teaming and it is standing up fine. It shows practically no wear. The street sweeper cleans it off every night. There is no absorption and we have yet to see the first horse slip on it, and we have often seen them slip on Main Street paved with brick. Our teams are back and forth on this street every hour and we would not trade it for any street in Richmond. Judging from the past three years' experience with it we do not think it would be possible to wear it out in fifty years. We had an expert cement man here looking at it last year and he remarked that it "would last forever," but this is one day longer than we think it will. Yours truly,

(Signed) JONES HARDWARE CO.

RICHMOND, IND., February 12, 1907.

Report on Condition of Concrete Pavements, Richmond, Ind.—The concrete pavements at Richmond have attracted considerable attention, and in answer to numerous inquiries and as a matter of general interest, I have today made a thorough examination of these pavements, and find conditions as follows: First, I may give some data as to the time of construction, cost, nature of traffic, etc. The alley adjacent to Westcott Hotel was put down in 1896, thus having been down about 11 years. Owing to a settlement of gravel around the foundation of the hotel, the pavement has settled slightly in places, but this settlement, which would be disastrous to almost any other kind of pavement, has only resulted in a slight unevenness of the blocks, and otherwise the pavement shows almost no signs of wear, although being a narrow alley it carries a large amount of traffic concentrated in a small space. The cost at the time was 18c per square foot. In 1901 the other alleys carrying large traffic, were paved. In 1903 Sailor Street was paved at a cost of 14½c per square foot, this street is in almost perfect condition. Last fall it was necessary to cut a trench through this pavement to lay underground telephone conduits, and it was with the utmost difficulty that the concrete could be broken, after laying the conduit the pavement was very carefully repaired, and seems as good as new.

In 1903 a very busy intersection of Seventh and N. A streets was paved with concrete at a cost of 16½c per sq. foot, and in 1904 Elm Place at a cost of 13c. The latter street is close to a hotel and some wholesale establishments, and over it is done some very heavy hauling, especially from the hardware and iron storage house of Jones Bros., wholesale and retail dealers in hardware. These pavements show a little chipping at the edges of the joints, left for contraction and expansion, and have an occasional temperature crack, but none of these cause any serious detriment, and otherwise the pavements show almost no signs of wear, and will apparently last for years to come, with no repairs or maintenance charges. In addition to those mentioned, we have a number of other alleys paved with concrete, and during the last season on alleys and streets we put down 3,500 square yards. Our citizens are very well satisfied with this pavement. It is very easily cleaned, and this is first class from an æsthetic and sanitary point of view. It is low in first cost, compared to brick, asphalt or bitulithic.

Cost for repairs and maintenance will be nothing for a great many years, and life of the pavements will apparently be far greater than any of those mentioned.

It is a little slippery for horses, but not more so than brick, and considerably less so than asphalt. Considering it from all points we consider this form of pavement a success. Yours very respectfully,

(Signed) FRED R. CHARLES, City Civil Engineer.

Cement roadway constructed in alleys in the City of Richmond, at the following prices:

	Contractor.	Year.	Price.
Alley east of Westcott Hotel	Rehling	1896	18c
Alley 1st S. of Main st. 8th to 9th st	Wagner	1901	14c
Alley bet. 15th and 16th st. to 1st alley north	Wagner	1901	17c
Alley bet. W. 8th and 9th sts., 1st north	Rehling	1902	14.5c
Alley 1st S. of Main st., 19th to 20th st	Rehling	1903	11c
Intersection N. 7th and A st.	Rehling	1903	16.5c
Alley 1st S. of Main from 19th st. west	Henshaw	1903	14c
Alley bet. S. 8th and 9th st. from Main South	Schneider	1904	15.5c
Alley bet. S. 18th and 19th st. N. and S.	Henshaw	1906	15c
Alley bet. S. 18th and 19th st. E. and W.	Henshaw	1906	15c
Alley North of Main from 6th to 7th st.	Henshaw	1906	13.3c
Alley bet. 6th and 7th st. from A St. North	Henshaw	1906	13.3c
Alley bet. S. 7th and 8th st. from Main St. south	Burkhardt	1906	15c
Alley 1st S. of Main St. from 6th to 8th St.	Schneider	1906	14.5c
Alley 1st S. of Main St. from 5th to 6th St.	Schneider	1906	14.5c
Elm Place N. 9th to 10th Sts.	Rehling	1904	13c

The average cost per square foot of alley improvement for the last ten years has been 14.7c sq. ft.

Concrete Construction for Bridges.

Concrete has come as a substitute to many of the building lines, in bridge construction it has apparently filled a long felt need. Up to a very recent period, a time well within the memory of many persons now living, there was but one alternative, that of the stone arch, and this form of construction was not only very costly, but also failed to lend itself to many locations. The cost of stone masonry has been, and is yet, in many instances, prohibitive, and a makeshift has in the majority of cases taken its place. But even with its use there has ever been the desire to make it as permanent as possible and to this end the present age of iron began to make itself felt in bridge construction. About sixty years ago iron was first used by the introduction of wrought bars into wooden trusses, these bars being in tension, while the wood was, generally, in compression, although it was merely common sense which placed them so. At that period engineers were just beginning to study trusses and the strength and loading of the various members, and even as late as 1875 the most of the companies which were then building iron bridges did so by guesswork and main strength. In the evolution of the iron industry the bridges built of part wood and part iron gave way to those in which the tension members were made of wrought iron and the compression of cast iron. Owing to the brittleness of the latter metal, it was soon discarded, and bridges were generally built of wrought iron throughout. The discovery of the Bessemer and open-hearth processes for the manufacture of steel produced a metal with so much more strength than wrought iron that engineers generally adopted it, believing that the question of permanent bridge construction has been solved.

There were a few engineers, however, who shook their heads and said that this, too, was a makeshift like the rest. Of a little longer life, perhaps, and good while it was new, but—how long would it last? The steel enthusiast replied that it was good for just so long as it was kept properly painted to prevent corrosion and consequent loss of material. It was found that this was not the true answer. Steel may last in its entirety so long as it is kept perfectly protected from corrosion; but when it is subjected to a great number of vibrations, even though they be well within its calculated strength, it becomes "fatigued." Under continual vibration the molecular form of the metal becomes altered in a manner resembling crystallization, and it has often been noticed that a rod which has been so changed in character is more brittle than cast iron. So the engineers who shook their heads have been to a degree justified by the results, and steelwork can not be considered as permanent unless it is protected from erosion and is free from vibration.

The protesting engineers did not content themselves with shaking their heads; they began to look for some material or combination of materials which might meet the necessary requirements. It must be plastic, strong, economical and permanent, and, in reinforced or armored concrete, they claim a good result. The design and construction of bridges built of this material has, as a matter of course, been governed by the same laws of evolution that controlled the progress of the iron bridge. Francois Monier was among the first to avail himself of it, and, in 1867 took out his first letters patent on the use of steel for tensile strength in his concrete. Perhaps the greatest impulse to the industry was given by the work of Francois Hennebique, another French engineer, who, between 1892 and 1902, furnished the designs for about 10,000 structures costing nearly $100,000,000.00. In this industry the American engineers have trailed far behind their European brothers. Only in the past ten years has any real progress been made in this country, but we are now equaling and will soon surpass the work on the other side of the water, both in design and in quantity.

One fine example of this form of construction is that of the bridge at Chattellerault, France, built in 1898. It is 26 feet wide by 450 feet long. The center span is 164 feet and the two end spans each 135 feet in the clear. All arches have a rise of one-tenth the length and the arch ring is but 20 inches thick. This bridge was built in three months and cost but about $40,000. Upon completion it was rigidly tested by government engineers and gave entire satisfaction. The most remarkable feature shown by these tests was that a load concentrated upon one arch caused a slight rise in the adjacent arches, an evident proof that reinforced structures are truly monolithic.

An excellent example of American work of this sort was erected in 1905, in a bridge over the Wabash River. It is 695 feet long, and the cost was slightly less a foot of length, although the prices of materials and labor are greater than in France. One reason for this saving is, however, due to the peculiar construction. In this bridge, the abutments are each connected to the first pier by means of steel rods imbedded in concrete under the bed of the stream. These rods take care of the thrust of the arch, which must otherwise be provided for by heavy masses of masonry.—*Exchange.*

RESIDENCE OF G. SCHEURENBRAND, MITCHELL, S. D., CONCRETE BLOCKS MADE ON DOW PERFECTION POWER BLOCK MACHINE.

As to Clay in Sand.

To the Editor of ROCK PRODUCTS:

In regard to an inquiry of Mr. Bingham and the well given answer of Mr. Larned, printed on page 38 of ROCK PRODUCTS, March 22, on the subject of foreign matter in sand, I beg to say that the impurities in sand, represented in clay, are feldspar, mica and almost always some ferric oxides, etc. Various analyses of limestone formation, especially of a hydraulic nature, show they contain various per cents of clay and calcium, magnesium and ferric salt, which when calcined and slacked and mixed with silicious sand, produce a good and cohesive mortar. Hence I beg to say that when in a cement composition, good cement and silicious matter, intermixed with a certain amount of pulverized clay are employed, the clay atoms will work no injury to some of the cement compositions. It is of importance to analyze such sand and determine the physical condition and quantity of clay in it, and in case that another large portion of clay is in existence, then the cement mortar should be mixed with a thin lime milk instead of water, when a product is obtained which has less affinity to water, than any other cement product. Almost every clay contains salt bases the same coming from the oxide of calcium or burned lime.

It is for engineers and concrete specialists without practical experience, a difficult task to determine the affinity of the by-mixtures or aggregates to the cement. Hence the cement user is obliged to experiment with the by-mixture of thin lime magma instead of water in the preparation of cement mortar, and learn to obtain a satisfactory result. As a matter of fact, clean, sharp, silicious sand and cement give the best result for work under water, and cement mortar composed of a clayey, silicious sand and cement prepared with a salt-free, thin, lime magma, instead of the use of water, produce a product fit for all work in basements of buildings and especially above the surface of the ground, for the lime magma (carbonate) in the cement product combines and saturates the alumina, subdues to a great extent its water affinity, and forms the calcium silicate, the agents of crystallization.

Experiments will prove the assertion. Without it, the operator is always in doubt.—*Practical Contractor.*

The Cement Stone and Supply Co., of Wichita, Kan., has commenced the erection of a big concrete warehouse in that city.

Just a Few Comments.

The reconstruction of San Francisco where so much concrete construction has been specified, makes that city easily the leader in concrete work. Another dry dock in San Francisco harbor has recently been contracted for which will cost $1,250,000.00 and will be the largest in the world. Concrete brick and concrete veneering blocks have become popular in the construction of residences, where lath and steadying walls are to be veneered on the outside. It is one of the handiest way of using cement building material and some beautiful effects have been obtained. It is also said in some cases to be quite as economical as sheeting and clapboards.

Many innovations in the shape and details of the steel rods that are used in reinforcing have been announced from time to time, but the good old simple twist upon which the first victories of reinforced concrete were obtained still holds it own in the first place with those reliable contractors who have formed the habit of using the material that won the first success.

There seems to be no end to the supply of business for cement sidewalk contractors. Every spring presents a new crop of miles upon miles of specifications. The universal acceptance of the cement sidewalk has led to the development of concrete street pavements which has been proved and practiced to be cheaper in first cost and in every way more satisfactory than asphalt or bitulithic pavement.

Patent Collapsible Tube System.

Joseph Hickson and T. E. Buck, Mt. Gilead, O., have applied for a patent upon a collapsible tube system designed for sewer and culvert construction by the use of monolithic or reinforced concrete. The system is to be known as the Hickson system and the idea embodied in this invention is so simple and practicable that there seems little reason why it has not been utilized long ago. The Mt. Gilead Tube Co. has been organized to do a general concrete contracting business and they will make a specialty of sewers, culverts and bridge work, using the Hickson system of collapsible tubes and molds of which they are the sole owners and patentees. Recently the tube company gave an experimental exposition of the manufacture of cement tubes for sewer constructions on the court house grounds at Bucyrus, O., which was attended by the county commissioners and a large number of business men besides several others who were interested in the tests, which provided to be satisfactory.

The Ferro-Concrete Co., of Philadelphia, has been awarded the contract for the construction of a 60-foot span bridge across the North Kill creek, near Reading, Pa., for $4,437.00.

Notes of the Industry.

The LaGrange Stone Co., LaGrange, Ill., are installing an air compressor to run their rock drills at their quarry and also a concrete mixer at their cement block plant where they have six concrete block machines. M. M. Bales is the superintendent.

The Podmore Concrete Co. has been organized at Wilkesbarre, Pa., for the manufacture of concrete blocks according to a system devised by Thomas Podmore, an architect.

Ernest Chauvin has organized a company at Houma, La., for the manufacture of concrete tiling, bricks, blocks, pillows and other cement products.

The Concrete Engineering and Supply Co., of New York, has been incorporated with a capital stock of $10,000.00 by Edmund Grossman, Nathan Gluckman and Frank Gluckman.

The St. Joseph Concrete Post and Block Co., of St. Joseph, Mo., has been incorporated with a capital stock of $5,000.00 by Wm. A. Ozenberger, Arthur S. Ozenberger, Frederick Ozenberger, Ernest Batcheler.

The Mobile Cement Co., of Mobile, Ala., has been incorporated with a capital stock of $3,000.00 by Edward A. Wierengo, Frank R. Forrest and Charles T. Forrest.

The Webber Construction Co., of New York, has been incorporated with a capital stock of $50,000.00 by Fred G. Webber, James M. Sturgean and George W. Simers.

The National Hydraulic Stone Co., 2 East Lexington street, Baltimore, Md., has purchased a lot in the suburbs of that city and will establish a concrete block plant.

The Wallis Concrete Co., of Houston, Tex., has been incorporated with a capital stock of $100,000.00 by A. M. Kellett, W. D. Majors, T. I. Wallis, T. K. Fulton and Fred Holcomb.

The Concrete Building Co., Collins, Miss., has been incorporated with a capital stock of $10,000.00 by W. L. Magee, A. L. Speed and others.

The Keystone Cement Block Co., of Allentown, Pa., have started operations for the season.

The contract for the construction of the new gymnasium of the Syracuse University, has been awarded to the Consolidated Engineering and Construction Co., of Syracuse, N. Y.

Omar Dametz, of Garden City, Kan., has been awarded the contract for furnishing the concrete blocks for twenty-three pump houses to be erected by the government near Deerfield, Kan.

The Randel Concrete Construction Co., of Brooklyn, N. Y., has been incorporated with a capital stock of $25,000.00 by John Randel, F. L. Randel and Sarah A. Randel.

The Square Deal Artificial Cement and Stone Co., of Colorado Springs, Col., has been incorporated by Peter Mortenson, A. Johnson and N. G. Hammon.

BLOCKS MADE BY CENTRAL CONCRETE CONSTRUCTION CO., LOUISVILLE, KY.

BRICK HOUSE 100 YEARS OLD OWNED BY CHARLES GUCKERT, NEAR GRANTVILLE, O.; PORCH CONSTRUCTED BY BICE & RASLER; BLOCKS AND COLUMNS MADE ON SIMPSON MOLDS.

Busy Louisville Firm.

LOUISVILLE, KY., April 9.—The Central Concrete Construction Co. has just installed a complete equipment of a fifteen horse power gas engine and air compressor, and are arranging to put in a complete steam curing plant. They have a large volume of business, consisting of reinforced concrete, heavy monolithic, sidewalk and porch work. They have also a big business in the concrete block line and at present are erecting a church, a residence, an apartment house and foundations for frame houses.

Bids have been asked by Charles Boettcher and E. Cooper, of Denver, Col., for an eight-story reinforced concrete building at the corner of Seventeenth and Champa streets, that city. The cost will be $200,000.00.

The Board of Education of Cortland, N. Y., has plans for a school building to be of reinforced concrete veneered with brick.

The A. D. Granger Co. has moved its New York office to rooms 1518-19-20, West street building, 90 West street, corner of Cedar, where they have much larger and more commodious offices arranged for the better conduct of their business.

The Louisiana Concrete Brick and Tile Co., Ltd., Shreveport, La., has been incorporated with a capital stock of $21,000.00 by L. W. Huckins, Clarence W. King, G. M. Leadman and E. P. Mills.

Meeting of Master Roofers.

The following communication from W. K. Thomas, 61 Warren Avenue, Chicago, Ill., secretary and treasurer of the Master Composition Roofers of America, is of interest to all dealers in roofing throughout the country. In regard to the next convention of the association Mr. Thomas has the following to say:

"The consensus of opinion as derived from correspondence with members seeming to be very much in favor of the month of September for the annual meeting of the association, I have decided (after consultation with the executive board) to call the same for Tuesday, September 10, 1907, but leaving the location (which will be either Norfolk, Newport News, Old Point Comfort or other point within short distance of the Jamestown Exposition grounds) for future announcement.

"With a view to making the best arrangement possible for the accommodation of our members and their families or friends who may accompany them, you will greatly aid the board of directors by returning the enclosed postal card, with the desired information as suggested thereby by May 15, or earlier date if convenient."

The convention promises to be one of the best ever held by the association as there are many topics for discussion which will be of inestimable value to roofers. Then, too, there is the opportunity of visiting the great Jamestown Exposition. Let every one get ready to go next September.

Business is Steadily Growing.

Pitts Bros. Co., Minneapolis, Minn., manufacturers of concrete building blocks inform us that their business is steadily growing since its establishment about two years ago. They ran their plant all winter, not missing a single working day, but were unable to accumulate any stock as the customers bought them regularly about as fast as they were produced. Their office and factory is located at 2852 Henopin Avenue. They use the Perfection power block machine exclusively and cure all their blocks in a moist vapor atmosphere contained in a room designed and constructed for that purpose. This concern has never conducted a construction department but manufactures blocks for the trade, selling them to contractors, to builders direct and to farmers who call at the works and take them away by the wagon-load. There are four of the Pitts brothers all of them practical concrete experts and they oversee in person all of the work of every branch of their factory, which is always conducted on the strictest business principles.

Rejuvenating Value of Concrete.

On this page we show an illustration of the adaptiveness of concrete structural ornamentation to old buildings. The picture shows the residence of Chas. Guckert at Grantville, O. This is a brick house more than 100 years old. The cement porch round columns and balustrade were made in Simpson ornamental molds. The photograph really does not give full justice to the fine appearance presented by the concrete work which makes this old house look as fine as a new structure which would have cost many thousand dollars. This is a type of many such improvements that are now being made by many of the enterprising contractors who have learned the use and practical application of the Simpson ornamental molds for porch columns and other structural accessories.

The Kanneberg Roofing and Ceiling Co., of Canton, Ohio, has been incorporated with a capital stock of $200,000.00 by Clarence A. Weirich, H. S. Renkert, Austin Lynch and David B. Bay.

The Egyptian Rock Products Co., of Evansville, Ind., has been incorporated with a capital stock of $25,000.00 to manufacture a patent roofing invented by E. F. Kellie, of Springfield, O. The incorporators are: Charles A. Covert, James V. Rush, A. F. Funkhouser, W. G. Archer, Edward F. Kellie and A. W. Funkhouser.

The Ferro Concrete Construction Co., of Cincinnati, has started the erection of a reinforced concrete building six stories high and to cost $150,000.00 for the Alling & Cory Co., corner of Jones and Dean streets, Rochester, N. Y.

CONCRETE IN NEW ORLEANS.

(*Continued from page 3.*)

high, the riprap foundation being just above the water. It is expected that much of this will settle in the course of time. This settling is apparent, from a view at the end of the wall on the east jetty. Where the wall exists the riprap is barely visible above the water. Looking seaward on the jetty work, where the wall has not yet been constructed, the riprap is a foot more above the water.

The concrete block is also growing in favor and several handsome residences have been constructed of hollow concrete blocks. The effect in many instances is striking and attractive and those contemplating building are at once impressed with the beauty and attractiveness of these buildings. Several handsome residences have been constructed of hollow concrete blocks. The effect in many instances is striking and attractive and those contemplating building are at once impressed with the beauty and attractiveness of these buildings. Several concrete block machines have been shipped lately to Belize, British Honduras, for use in that country. It is believed that such houses will be a boon to the people there turning the hot tropical sun and making the people who live in them comfortable at all seasons.

But little crushed stone is used in concrete work in New Orleans. Recently the Barber Asphalt Co., which put down several miles of asphalt paving, crushed the cobblestones and Belgian blocks they removed from the streets and used the product for their concrete foundation. This is only an isolated instance, however, as sand and gravel are plentiful and can be obtained at small cost. What is known as Thompson gravel is obtained at Prophet's Island and is in favor with the engineers. It has a good percentage of sharp coarse sand and the gravel varies in size so that when used in concrete work the percentage of voids to be filled is minimum. The price of crushed stone is usually $1.75 a cubic yard, gravel $1.75 a yard and sand $1.25 a yard. The Thompson sand comes from Prophet's Island, which is 200 miles up the Mississippi river. Lake sand and sea sand are also used.

Civil Engineer Praises Concrete.

The widespread and constantly increasing use of reinforced concrete construction, the claims made for it by its supporters, counterbalanced by the distrust excited in the minds of financiers by a number of failures which have occurred within the immediate past, have brought this type of building prominently to the attention of investors and led to close inquiry as to its advantages and possibilities.

Although concrete is one of the oldest building materials in use, reinforced concrete is of comparatively recent origin. The story is told that about forty years ago a French gardener, one Joseph Monier, devised and patented a method of reinforcing concrete, successfully applying it in the making of flower pots. From this modest beginning an industry has been developed which has revolutionized building construction, and, in the opinion of authorities, marked the inception of the greatest advance made in building construction since the introduction of structural steel.

The predominating advantages of reinforced concrete construction are economy, ease and rapidity of erection, durability, fireproofness, impermeability, evenness of temperature, deadening of sound, monolithic nature, and rigidity.

Perhaps the most important features in the eyes of the investor are the economy and fireproofness. Although a reinforced concrete structure may run at present a little higher in its initial cost than one erected of stone and steel, its ultimate cost, due to practically nominal maintenance charges and reduced insurance rates, will more than offset the increased initial cost. The fires at Baltimore and San Francisco have demonstrated beyond a doubt that concrete is absolutely fireproof—that it is the only building material in use today which is able successfully to resist high temperatures.

The speed with which a reinforced concrete structure can be erected is a point of particular interest to the investor. The materials of which a building of this kind is constructed can be had anywhere and there is consequently no delay in waiting for supplies, as is generally the case with a stone and steel structure. Speed in construction means early occupancy; a matter of dollars and cents to the owner, allowing him to fill his building with tenants with the least possible loss on his investment,

H. T. LAWLER FLOURING MILL, NEW ORLEANS, LA., REINFORCED CONCRETE CONSTRUCTION. MACKENZIE, GOLDSTEIN & BIGGS, ARCHITECTS.

and enabling the manufacturer to begin his output at a date which would otherwise be impossible.

The steel skeleton type of office, mercantile, apartment and hotel buildings which has been used almost universally in this city for many years, requires in its construction the services of skilled mechanics who receive the highest rates of wages, including stone masons, bricklayers, plasterers, steel erectors, terra cotta setters and carpenters, while the materials used in the construction of the building consists of stone, brick, terra cotta blocks, steel, plaster, lumber and so on. In the reinforced concrete building of today skilled labor is cut down to a minimum, with the exception of carpenters practically all of the labor is of the unskilled type, drawing low rates of wages, and the materials consist almost solely of sand, cement, broken stone, and steel rods, which are easily obtainable at low prices. Owing to this minimum use of skilled labor it is also apparent that the possibility of labor difficulties is greatly reduced.

As to the failures which have recently occurred in a number of instances, there is this to be said: The apparent ease with which a reinforced concrete building can be erected has caused the business to be taken up by a large number of inexperienced contractors. A reinforced concrete building essentially requires careful designing and engineering, and furthermore, thorough and conscientious inspection while the building is in course of erection. The failures which have occurred have been mainly due to poor design of the reinforcement and too great haste in removing the forms supporting the setting concrete.

Reinforced concrete construction, like any other form, should be done only by contractors experienced in this line. The number of firms who are now specializing in reinforced concrete leaves no valid excuse for the employment of inexperienced contractors. The neglect of this factor spells disstruction.—J. W. Buzzell, C. E., in the *New York Times*.

A Giant Railroad Bridge.

The Portland-Seattle Railway, which is part of the great Hill System, has commenced work on the building of a bridge to span the Columbia river at Vancouver, Washington. This bridge, when completed, will be the longest steel railway bridge in the world. In its construction, immense quantities of cement, reinforced concrete, stone and structural steel will be used. The bridge will be one and one-half miles long—7,920 feet. There will be forty-eight massive piers. Ten of these piers will be in the river proper, while the other thirty-eight will rest on Cook's Island, that divides the stream, and cross the broad slough on the Oregon side. The piers in the river will be sunk forty feet below the bed, and will be of solid reinforced concrete. Each pier will be forty feet wide at the foundation, and twenty-five feet at the top. Concrete will be used exclusively until within forty feet of the top—the floor of the bridge; the upper forty feet will be composed entirely of Oregon and Washington granite—in huge blocks, united by cement. The river piers range in depth from 100 to 110 feet. The other thirty-eight piers will not be so long, but are to be just as massively built. These will also be composed of concrete and granite. Some idea may thus be formed of the enormous quantities of cement, sand, gravel, crushed rock, and granite that will be required.

Invents Concrete Railway Tie.

Concrete plays an important part in a new invention in railroad ties on which Harry J. Corell, of Mt. Jewett, Pa., has secured patents. Concrete blocks connected by forged steel bars and securely bolted to the rails, make up the principal feature of the ties. It is said that with these ties there can never be a case of spreading rails, so common with wooden ties. It is claimed that the invention may solve the problem which has been confronting railroad companies for years and which refers to the securing of wooden ties, owing to the great scarcity of suitable oak and other tie timber. It is said that the new tie is practically no more expensive than wood and will last for a lifetime. For street car tracks in cities, these ties would be desirable, it is said, because when they are once in place, the pavement would never have to be torn up to replace them. Each sleeper is approximately thirty in. long, twelve wide and twelve thick, and if necessary to guard against possible fracture, could be reinforced with metal rods laid in the blocks. Another feature, which is said to appeal to railroad contractors, is the fact that these ties can be made at any point along the line of road where little concrete block work could be set up.

The Green Mountain Lime Co., of Middleburg, Vt., has been incorporated with a capital stock of $100,000.00 by Charles E. Pinney, Robert F. Pinney, John A. Fletcher, Isaac Sterns and J. E. Buttolph.

TWO VIEWS OF CAR BARNS OF THE TWIN CITY RAPID TRANSIT CO., MINNEAPOLIS, MINN. CONCRETE BLOCK AND CEMENT BRICK CONSTRUCTION.

The Twin City Car Barns.

Between Minneapolis and St. Paul, on the so-called old interurban street railway line, a work is under way, of a size which is little appreciated by those who pass it regularly. It is the new set of car barns being built there by the Twin City Rapid Transit Co., which operates all the car lines in Minneapolis and St. Paul, and is also running interurban lines in the name of an auxiliary company, the Minneapolis & St. Paul Suburban Co., to Stillwater, Minn., eighteen miles from St. Paul, to Excelsior and Deephaven, Minn., both on Lake Minnetonka, about eighteen miles from Minneapolis, and to Robbinsdale, Minn., and to St. Louis Park, Minn., both the latter being about six miles distant from Minneapolis. The company has three lines between Minneapolis and St. Paul, and has lines in all directions in both cities.

Heretofore the company has maintained shops in Minneapolis at Thirty-first street and Nicollet avenue, where a full block was occupied, and the different local barns have also furnished some shop room. But the growth of the Twin Cities, and consequently of the street car business, has been such that the company had to have larger room and as well, a better and more central location for the repair and new work. Hence this tract at University and Shelling avenues was secured, within the city limits of St. Paul, but almost equidistant from each city. A cross-town line on Snelling avenue makes it accessible to the other two interurban lines, so that in sending cars to or from the shops, it will be possible to divert them along this line and through the suburbs of each city to the destination without entering the center of the cities, and adding to the congestion which is inevitable in the operation of a number of lines upon a common set of tracks.

The tract here contains a number of acres, covering several city blocks, and thus affords room for the expansion which is as certain as in the growth of the Twin Cities, something that no one in the Northwest doubts for an instant. The two cities are growing rapidly in every direction, and what is more to the point, in the way of a difference, they are growing toward each other, in this Midway district, so-called. This is something that was not the case in the past. This Midway district was allowed to furnish a dead center between the cities. But for several years past, manufacturing plants have been establishing themselves along the tracks of the Minnesota Transfer Railway Co., a few blocks from this site, and connected with it so that steam cars are switched to the buildings by electric power, over the street railway company's own tracks. The strategic value of this site is noteworthy in every sense.

The tract was secured several years ago, but owing to differences which were pending with the city council of the city of St. Paul, the company felt it necessary to defer the erection of the shops. Finally in the summer of 1904, the project was taken up for active work, and the first plans were drawn for the buildings. The intention at that time was to erect the buildings of brick and stone, steel and iron construction, following the usual outline of car barns and shops, producing a common place and unobtrusive set of buildings, or rather one immense building, the figures being for a main building, 520 x 550 feet in size.

But about the same time, the value of concrete work was being established in the Twin Cities by actual use and practical test. Concrete blocks were being experimented with and the results were quite satisfactory. Tests of concrete blocks were also being made by many people, official and unofficial, and the results were again satisfactory. So the officers of the street railway company gave careful attention to the new building material, and subjected it to a searching investigation at the hands of experts. All the time, the use of reinforced concrete construction was gaining in favor, and this was in a sense an assurance of the value of concrete, although not necessarily of concrete block. The latter also had its tests and the results were carefully scrutinized. The scrutiny was a satisfactory one, and the result was that the Twin City Rapid Transit Co. decided after due consideration, to change its materials and to utilize concrete blocks and cement brick for the construction of the buildings for the shops and barns of the most important station in the system.

This question settled, it practically carried with it the question of the kind of concrete block machine to use, for while the experiments had been wide enough to include all classes of concrete block machines, the machine which had made the best impression was the Dow Perfection power block machine. So in the spring of 1905, George Cooke, of Minneapolis, was awarded a contract to manufacture concrete blocks and cement bricks for the buildings. The entire plant will include a total of fifteen buildings, but the intention is to erect but nine of them at present. Mr. Cooke therefore started work for excavation for the different structures and also to manufacture the concrete blocks. It is quite a task to make concrete blocks for so large an outlay as was called for in this project, but Mr. Cooke kept the concrete block plants working steadily turning out about 600 blocks a day, each having received a pressure of 80 to 100 tons, and usually involving from 45 to 55 seconds a block. The force required was the same as for the hand tamp machine, there being only the addition of a small gasoline engine.

For the bricks, the Peerless cement brick machine was used, and this, too received high compliments at the hands of the contractors operating it.

The work of manufacturing the blocks proceeded steadily for a long time without much apparent progress being attained on the construction of the buildings. The foundations were progressing, and the pile of concrete blocks in the yards was growing larger and larger, but there was not a great deal of building visible. The pile of concrete blocks at one time reached the volume of nearly 600,000, and it was quite a sight, as well as a great advertisement for the concrete blocks, and they were pointed out to visitors and strangers as an instance of the great progress which was being attained in that industry.

Construction work on the superstructures was started when the materials on hand had reached a point where they afforded an assurance that there would not be any trouble from lack of materials, and it was carried on steadily, and the buildings grew up so quietly and unobtrusively that it seemed as if they were moving by a growth instead of being constructed. One after another of the buildings went up and took form and completeness as far as exterior appearance was concerned. Some delays occurred because of the trouble in getting labor. This affected every job of every character put up in the Twin Cities, more or less, and there was scarcely a time when the big sign, "Men Wanted" was not displayed at the work.

But the nine buildings are now pretty well along. They are all much like the illustrations accompanying, being built for the easy access and exit of the big double truck street cars which are used by the company, and sets of tracks run through the different buildings. Some of the tracks have pits between them to enable easy access to the motors of the cars, for repair or inspection.

The buildings are practically all concrete construction. The heavy power blocks were used for the facing and much of the exterior wall work, as well as for the partition walls between the different sections of the interior. The cement bricks were used for the more dressy portions of the exterior walls and for the trimming work where it was desirable. The buildings while plain, in the sense of being free from any attempt at fanciful architecture, are free from the hideous box-like appearance which so often marks car barns. They are of the natural cement color, and present a pleasing appearance as a whole. When completed and occupied, they will present an aspect which will not be objectionable to the citizens to mention their existence when passing them in company with visitors and strangers.

Crushed Brick for Concrete.

Loren E. Hunt, a government engineer in charge of the testing station at the University of California, in Berkeley, reports that he has proved by experiments that bricks taken from the fire debris, in San Francisco, crushed and screened when mixed with cement in proper proportions, make a strong building material. The structural association of San Francisco, composed of engineers, builders and architects, has been co-operating with Hunt in these tests, extending over a period of several months. Some of the bricks were used without being cleaned and others were cleaned before crushing. The latter give much greater efficiency. The screened brick concrete averaged high in strength. Hunt says that this great strength is due to the fact that the surface of a broken brick is such that an excellent bond is obtained between mortar and brick. It is not necessary to soak the crushed bricks before making the mixture, if a wet concrete mixture is used. It is said that a hole can be drilled in a floor or wall of the brick-concrete with much less danger of shattering the surrounding mass than is the case with rock mixtures. Engineer Hunt says that he is certain that the brick mixture will not weaken with age, and he will make further tests to demonstrate this more thoroughly.

For the Retailer.

The National Builders' Supply Association.

Meets Semi-Annually.

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Official Organ, ROCK PRODUCTS.

Stocks of Supplies Short.

The stocks of all kinds of building materials in the hands of principal dealers of the Middle West and South are low for this season of the year. Usually the warehouses are full of cement, lime and plaster, and the yards are stacked up with sewer pipe, face brick, fire brick, and the other clay products that enter into building construction. The long drawn out car shortage which has prevailed since the first of the year has more to do with this than anything else. For all the dealers have placed large orders with the manufacturers for supplies, and the disappointments with regard to deliveries have about reached the limit of endurance for the lack of goods to deliver is now beginning to be a positive loss of business opportunities. Deliveries are now reported as being much better within the last week or ten days, and relief in this direction is already in sight.

It has been a backward spring. The continued rain and inclement weather have prevented the contractor from getting a start on new work where the excavations constitute the first division of preparation. These weather conditions have really been a benefit to the supply man whose office otherwise would have been besieged by contractors demanding goods which he was in no position to furnish. The operations at many of the lime quarries have been held back to a great extent by the wet weather, and they are only now beginning to get the kilns in operation for the delivery of lime that was ordered thirty to forty days ago.

There is no doubt about the satisfactory volume of building operations that is going to make a good business for the dealers in every locality in the coming season. The big jobs in the larger cities are of that class which specify cement and plaster to a greater extent than was formerly the case, and the volume of small and medium-sized jobs, such as residences and ordinary two and three story business buildings, seems to be livelier than one year ago.

There is but one question of interest at the present time, and that is to secure deliveries of the supplies already ordered from the manufacturer, and the weather conditions to settle in such a way that the contractors can with facility clear up the ground and begin natural operations. It's a good outlook for another prosperous year's business, and that is all that we have to deal with at the present time. Let the future take care of itself or it might be better to say that when next year arrives, we will be prepared to take care of it.

Hugh Thomas Co., New York, has been incorporated with a capital stock of $10,000.00 to deal in builders' supplies, including cement, lime, sand and gravel. The incorporators are Hugh Thomas, 453 W. 155th Street, and James McLaughlin, 1151 First Avenue.

D. K. THOMPSON, JR., SECRETARY OF OHIO BUILDERS' SUPPLY ASSOCIATION.

Buys Out His Partner.

J. H. Haines, Marion, Ind., has bought the interest of his partner, Mr. Good, and will continue the supply business formerly conducted under the firm name of Haines & Good. The firm has conducted an acceptable business for the last four seasons, and with careful pains, he says he has every reason to believe that he will retain the patronage that he and his partner have built up.

Changes in Cleveland Concern.

A. G. Seitz has been appointed superintendent of the Kelley Island Lime and Transport Co., at Marblehead, O., relieving general superintendent Hart of the work at that point. G. J. Wheeland has been made assistant superintendent of the lime company and will have special charge of the Lakeside and Marblehead railroad.

Will Handle Builders' Supplies.

The Empire Wall Plaster Co., Utica, N. Y., has been incorporated with a capital stock of $25,000.00 by William H. McCann, John Davies and E. B. Lee. The new company takes over the business and plant of Mr. McCann, who for many years has been engaged in the manufacture of hard wall plaster. They will add a full line of building supplies, and make a specialty of stone and brick paving materials.

A Live Wire in Ohio.

On this page we present the photograph of David Kinsey Thompson, Jr., of Columbus, O. He is the secretary of the Ohio Builders' Supply Association, and is personally in the fore front of the association work of the state organization. He already has a wide acquaintance among the dealers of the state, and expects to make a personal visit, or at least to get into direct communication by correspondence with all the Ohio dealers who are eligible to membership in the association.

At the recent convention held at Columbus the association took definite steps in the direction of securing a better mechanics' lien law in Ohio, and the secretary means that every dealer shall know that it is up to him to assist in his own locality to get busy with the representatives that will be elected to the next legislature, when the matter will be brought up for consideration. Besides this the association work has taken up the elimination, in so far as possible, of unjust competition among dealers, and to show the manufacturers and jobbers the advantages of dealing with even the heaviest consumers of materials through legitimate channels of the dealers.

Mr. Thompson is a young man, being only twenty-seven years of age, but he is really an old supply man, for more than ten years ago he began as office boy with the William Leggit Co., of Pittsburg, and for five years has been connected with the Houston Bros. Co., of Pittsburg, one of the largest distributers of builders' supplies in the United States, and a member of the board of directors of that concern. He is also one of the directors of the recently organized Columbus Builders' Supply Co. In the organization of the Ohio Builders' Supply Association a little more than one year ago Mr. Thompson was one of the most active spirits, and used his wide and favorable acquaintance among the dealers of the state in securing their attendance at the first convention. He is a firm believer in the association idea, an accomplished salesman with an attractive personality, which wins him a hearing wherever he goes, and in his position as secretary of the Ohio Association the dealers of the state have made no mistake, for he is a steam engine that furnishes his own fuel.

A Day with Memphis Dealers.

Memphis is one of the most important distributing centers in the great Mississippi Valley, and in the city itself there is a large number of important building operations going on at the present time. The Shelby county courthouse is considered to be a million dollar job, but in all probability before it is finished, the total cost will amount to $1,500,000.00. The Peabody hotel is being reconstructed along such radical lines that it really means the erection of a new hotel. This job will run up into the hundred thousands. The Memphis *Commercial-Appeal* is erecting a four-story steel frame and fire proof building on court square and there are many buildings of lesser importance being constructed on the principal thoroughfares in the congested business district of the city. In New South Memphis several important factory buildings are under construction, and there is a vast volume of residences and suburban homes in the populous western portions of the city. Memphis is growing rapidly, and from an architectural standpoint is getting to be a modern city that realizes the opportunities and advantages of her location and facilities for doing business as the central mart of a prosperous and rapidly developing territory.

The builders' supply interests are represented by four energetic and enterprising concerns, all of whom have prospered by reason of the tremendous growth of the city and the consequent increase in the use of supplies of every description. The four competitors in the supply business at Memphis have been wise enough to realize that cut-throat methods of competition are not profitable to anybody, and they have arranged between themselves a definite plan upon deliveries of supplies by dividing the city into districts, and charging a uniform advance upon long hauls, which add greatly to the cost of doing business. These and other matters have been amicably adjusted, and outside of the shortages of delivery of supplies from the manufacturers the supply business is in a healthy condition, as all of the firms have a big supply of orders.

It was our pleasure recently to meet all the dealers at Memphis in a little social gathering at the Gayoso hotel where we talked shop until a late hour. J. T.

Forsyth was elected chairman and he told some reminiscences of the supply business in the early days. Among other things he mentioned the old building which he is now using for a warehouse up in the railroad district, but which was once the *bon ton* portion of old Memphis. In fact, the building now occupied by Mr. Forsyth's warehouse has a famous history. It overlooks the river and when new was known as the Belle Tavern. Here the Marquis de Lafayette and Andrew Jackson, president of the United States, were entertained and held a brilliant reception of the planters of the olden time. ROCK PRODUCTS will show you a picture of this famous old structure at some future time, for it rained on our artist when he tried to get a photograph of it.

W. W. Fisher, of the Fisher Lime and Cement Co., who is the distributer of the Kosmos brand of cement, told all about the new warehouse that he had just completed, and incidentally had some anecdotes to tell of his recent trip on an extended purchasing tour. Mr. Fisher organized his business a little over a year ago and has met with unqualified success on account of his intimate knowledge of the business and wide acquaintance with Memphis contractors and business conditions.

Steve Wright was there. He is president of the Wright Lime and Cement Co., and also interested in the Fischer hydraulic building block business, which has made no little success in the line of concrete blocks. They recently had a fire out at his block factory, but the damage has been repaired for the most part. Steve is one of the dealers who believes in promoting side lines that use builders' supplies for the purpose of training them up to become large consumers.

J. C. Lovelace, the vice president and general manager of John A. Dennie's Sons Co., was unwell and could not join the pleasant party, but he sent his regrets. He came to Memphis recently from Alabama, and although his firm is one of the oldest in the South he has only been in Memphis for the last few months.

There were Ed and Fred Cubbins and Ed Frazer, who constitute the Cubbins Lime and Cement Co. Fred Cubbins knows everybody in Memphis because he was born there and his father was in the brick business when Memphis was only a little town. Ed Cubbins used to be a contractor himself and he knows how it is when he goes up against a man who has to buy supplies. Now neither Ed nor Fred Cubbins is ever out at the warehouse, or not more than a minute at a time, and Ed Frazer has to run the ship, and don't you forget that he is the boy that can do it.

There is a club house down by the Cubbins' warehouse, where the initiation is the most mysterious of all the secret societies that were ever organized. Nobody but good fellows can belong to this club which has no name at all except to good fellows who are invited, and the mysteries are impossible to relate without the assistance of a billy goat. There never will be another club of this kind and it will go out of commission as soon as the billy goat dies.

If the Eastman Kodak Co. hadn't utterly fallen down with its contract to produce a reliable camera there would be some Memphis pictures that would entertain every reader of ROCK PRODUCTS, whether they manufacture cement in the Lehigh Valley, pump sand in the Mississippi river, manufacture metal lath in Cleveland or fire brick and sewer pipe in St. Louis as well for all the dealers in other cities.

Big Columbus Retailers.

The Columbus Builders' Supply Co., Columbus, O., was incorporated February 15, by A. C. & S. M. Houston, of Pittsburg, Pa.; Frank Hunter, D. K. Thompson, Jr., and J. P. Carlisle, of Columbus, O., and Geo. B. Christian, Jr., of Marion, O. They bought out the supply department of the Columbus Contractors' Supply Co. on March 1, and will continue to conduct the extensive operations with the fine clientage already established among the contractors of the city of Columbus, and the immediate neighborhood. They will conduct three yards in different locations and handle a very complete line of builders' supplies, besides operating a large mortar plant. The officers and directors of the new concern are A. C. Houston, president; J. P. Carlisle, vice president; Frank Hunter, secretary and treasurer; George B. Christian, Jr., and D. K. Thompson, Jr.

Plaster.

Shortage of Gypsum Plaster.

It has been a backward season for getting the stucco plants started. The universal long continued rainy season has made itself felt in the producing districts by the presence of more water in the gypsum mines than usually appears to make the spring time troubles. This naturally means that the mining operation is more expensive than the first calculations for the probable costs of the season's business. There is no way to proceed with the manufacture of stucco without carrying on the mining operation steadily and continuously in order to get the indispensable raw material and extra cost at the mine means that the gypsum rock costs more money than was expected before it goes to the crusher.

The delay of getting the mining operation into a condition to deliver gypsum rock at the surface means a curtailment of the expected production of the mines, and this brings a shortage at the far end of the season which means that calcined gypsum will grow scarcer just at the time when it is needed the most in the completion of the large volume of building operations that are always undertaken in the spring and summer and rushed to completion before the cold weather sets in. The volume of business already placed but still undelivered, will take up much the larger part of the possible production of all the mills from this time forward, and those who have already placed their plaster orders in the whole line of hard wall or gypsum products should really congratulate themselves for the condition confronting the producers, big and little, simply mean an advanced price all along the line.

Everything containing gypsum will have to bring more money in just exactly the proportion as the amount of gypsum contained in this composition. Shipments in this line of course have been unsatisfactory as in all others, but just now there appear to be slightly better conditions in the car situation, and if the improvement continues, many delayed orders will be delivered as fast as it can be moved out. The supply of plaster and plaster products in the hands of the leading dealers of the Middle West and South is much lower generally than they would like to be. In fact, few dealers have any amount on hand that looks to them like a supply. It is not the season for great pressure in the plaster line because much of the building operations has only commenced and will not reach the stage of requiring plaster in any great volume until later on. Still there are always a lot of small orders which are really the most profitable factor from the dealer's standpoint, which requires him to keep on hand some stock of several different varieties to make up a plaster lime. Such stocks at this time in many places are badly broken, that is to say, where a dealer has a few bags of plaster finish he will be entirely out of sanded goods or wood fibre goods, and this lack of assortment is making the present pressure upon the producers which has been so exasperating during the long period of the car shortage. The fact is we have not had an interview with a dealer in six or seven states who hasn't had some general complaint about the lack of deliveries. In some cases they have been forced to go out and beg the architects and builders to accept a substitute upon the specifications where hard plaster and finish were required. The steadily growing popularity of hard plaster with the building public makes this state of affairs particularly acute at this time.

The producers in every section where plaster is manufactured are sparing no effort and expense to take care of the trade. There is no doubt that with the improvement in the transportation problem they will rapidly relieve the present pressure and take care of the tide of demand as it approaches.

The F. D. Cummer & Son Co., of Cleveland, O., report several sales of the Cummer continuous gypsum calcining process, which dispenses with kettles. One plant they are completing has capacity for producing fifteen tons of calcined gypsum a day, and another ten tons an hour.

California Gypsum.

Frank L. Hess, of the United States Geological Survey, has recently made a tour of the gypsum fields of California and has returned to Washington laden with specimens. He will prepare a bulletin on California gypsum for publication in the near future.

There are now four gypsum mills in the state, one at Amboy, one at Los Angeles, and two at Palmdale. Of those at Palmdale one is still in process of construction. The product of these mills is consumed in the state. It is used mostly for wall plaster, but a smaller amount is ground for fertilizer. Generally speaking, the gypsum runs from 54 to 90 per cent pure. Deposits occur, however, in the form of alabasters which are very pure and are suitable for the manufacture of plaster of Paris, but they are far from railroads, and so at present unavailable.

The deposit at Amboy is found in the middle of the Mojave desert, along the tracks of the Santa Fe railroad. The plant is situated near the bed of an old lake around the edge of which the gypsum has been deposited. Gypsum sets very quickly, usually in about five minutes. Because of this, a retarder often consisting of slaughter house refuse, dried and powdered, which delays the setting from fifty minutes to two hours, is employed. There is nothing peculiar about the California gypsum, as distinguished from that of other localities, except the fact perhaps that at one of the plants it is necessary to regrind the gypsum after calcining it.

California producers are fortunate in being able to use oil as a fuel in their gypsum mills. Not only is it a cheaper fuel than wood or coal would be in that state, but it is better suited to the exegencies of the work, as the heat of an oil flame can be more easily and quickly graduated than can that of furnaces which burn wood or coal.

Pulp Plaster Men Meet.

The second semi-annual meeting of the Elastic Pulp Plaster Manufacturers' Association was held in Buffalo, N. Y., at the LaFayette Hotel, March 28. The following mills were represented: Binghampton, N. Y.; Rochester, N. Y.; Hartford, Conn.; Bellows Falls, Vt.; Newcastle, Pa.; Warren, O.; South McCallister, I. T. The following officers were elected for the ensuing year:

J. A. Whitcomb, South McCallister, I. T., president.

C. F. Towne, Binghampton, N. Y., vice president.

F. E. Taft, Rochester, N. Y., secretary and treasurer.

The delegates were entertained by Mr. Whitcomb at a banquet in the evening, followed by a theater party as a compliment from sack manufacturers. Norfolk, Va., was decided upon as the place for the next meeting in September. All those present reported a splendid business during 1906 and prospects for 1907 as being bright.

New York Gypsum Production.

According to the report of Dr. John M. Clarke, state geologist, of New York, the mines and quarries of gypsum in the Empire State produced 264,581 short tons of gypsum during 1906, valued at $685,053.00. This is a large gain over 1905 when the production amounted to 191,860 tons, valued at $551,193.00. The increase came mostly from the companies manufacturing wall plaster and plaster of Paris. Several more new mines are being opened in New York and the output is expected to be materially greater this year.

He Likes Rock Products.

W. R. Nichols, second vice president and general manager of the Pacific Coast Gypsum Co., of Tacoma, Wash., writes: "We have more orders than we can fill at the present time and are not looking for new business. We are much interested in your paper and find some valuable reading matter in it."

The Grand Rapids Plaster Co., of Grand Rapids, Mich., has increased its capital stock from $210,000.00 to $250,000.00. The company will also deal in cement, lime and builders' supplies.

The Louisiana Wood Fiber Plaster Co., of New Orleans, has been incorporated with a capital stock of $20,000.00 by George Montgomery, Charles Toppino, Jr., and N. M. Ansley.

Story of the Cardiff Giant.

FORT DODGE, IA., April 17.—Graders at work on the interurban line of the Newton and Northwestern road from Des Moines to this city, in coming up the beautiful valley known as "Gypsum Hollow," have obliterated all trace of the birth-place of the "Cardiff Giant," the greatest fake conceived and executed during the last fifty years. The work of bringing the roadbed to grade has filled in the spot which has so often been pointed out as the excavation from which the huge boulder was taken that was afterward chiseled into the form of a human being.

It was thirty-nine years ago that two men came to Fort Dodge and took up a residence at what was then the St. Charles Hotel. One man gave his name as Hull, and claimed Syracuse, N. Y., as his home. The other was known as Martin, and his residence Cedar Rapids, Ia. They pretended to be studying the geological conditions around Fort Dodge, but when asked what use they intended making of the huge block of gypsum rock which they had quarried, they told conflicting stories.

They experienced considerable difficulty in securing a block of stone large enough for their purpose, and when Michael Foley finally excavated one large enough, they found upon measuring it that it was just twice as large as was necessary. Half of it was brought to Fort Dodge and used in the foundation of a new dwelling house, and the other half was loaded on to a wagon and started to Boone, Ia., to be placed aboard the Northwestern road at that point. It required over a week to transport it thirty miles and enroute it broke down every bridge encountered. The first man to whom the contract was given for hauling it, became discouraged and the second man did not attempt to move it until he had reduced the weight 1,500 pounds by chipping off liberal sized flakes.

The stone was shipped to Chicago where it was given into the hands of a sculptor who hewed it into the form of a human being. From there it was shipped in a large wooden box 12 feet long, 4 feet wide and 3 feet deep, to George Olds, Union, N. Y. It had been pricked with needles to give it the appearance of human flesh and treated with acid to render an ancient tinge to the surface. From Union it was transported by means of four horses to the Newell farm, near Cardiff, New York, a distance of fifty miles. Here it was buried at night behind the barn, and allowed to remain there until a year later, when two men were engaged to dig a well behind the barn, directly at the spot where the giant had been buried a year before. They had not proceeded far with their digging until they encountered the giant. When they had at length uncovered him, their astonishment was beyond measure. The news quickly spread throughout the neighborhood until a crowd had congregated on the edge of the grave. The news traveled during the night and the following day found a vast crowd viewing the remains.

At first Newell permitted the curious to view the grewsome sight free of charge, but finally concluded it was worth fifty cents a head. He erected a stockade around the place and was doing a nice business, when he was offered various sums up to $10,000.00 for his find. But he concluded that if it was worth that much to others, it was to him, and refused all offers. Special trains were run out from New York City, carrying visitors to see it by the thousands, and it is estimated that fully 50,000 people viewed the giant during the first week. Among this number were many scientists of note, who differed greatly in their views. Some of them, considered eminent, pronounced it genuine; others were loud in their denunciation of it as a grand fake. P. T. Barnum, the showman, finally offered Newell $50,000.00 for it and his offer was refused.

News of the finding of the giant, which resembled stucco or gypsum rock, reached Fort Dodge, and recalled to mind the two men who had been there a year previous and secured the large rock. Ex-Governor B. F. Gue, then editor of the *Iowa Northwest*, took a hand in the matter, and after some quiet investigation, exposed the whole scheme and put the perpetrators to flight. When P. T. Barnum found that he could not buy it, he quietly made arrangements for a duplicate which he showed in Boston for a long time and made a fortune out of it.

Metal Lathers not Structural Workers.

CLEVELAND, O., April 10.—A matter of considerable interest to the trade is the decision here that men who, following the occupation of tacking up metal lathing, are not to be considered as part of the structural iron workers' union, but really belong to the lathers' organization. About a month ago a committee of three met to decide the long standing quarrel between the international bodies as to where the metal lathers rightfully belonged. The Wood, Wire and Metal Lathers' Union announced that the men came within their jurisdiction but the structural iron workers denied any authority other than their own. William J. McSorley, representing the international body of the lathers, and F. M. Ryan, representing the structural iron workers, met in Cleveland, and with J. J. McConnell, national president of the machinists' union, tried to come to some decision. After wrangling over the matter for some time they failed to decide, and the matter was referred back to the executive board of the American Federation of Labor. Announcement has just been made that the lathers have won out and that henceforth the metal lathers will be considered a branch of their organization. Thousands of men will be effected by the decision, for it is a branch of industry which is rapidly gaining, particularly in cities where stricter fireproofing ordinances have been put into effect.

MICHAEL FOLEY, WHO QUARRIED THE CARDIFF GIANT.

Nashville Plaster Concern.

NASHVILLE, TENN., April 13.—The officers of the Nashville Wood Fiber Plaster Co., recently incorporated with a capital stock of $25,000.00 have been elected, E. M. Forbes, the organizer, being elected president, G. A. Myers, vice president; H. F. Cooper, secretary and treasurer, and J. T. Hoover, manager. These, with E. M. Ferguson, constitute the directorate.

The plant will be a three-story building and will be located on the lines of both terminal companies, as well as near the river. The site is on First Avenue, North, adjoining the Tennessee Masonry Supply Co. Contracts for the erection of the plant will be let next week and operations will begin the latter part of June. The output will be thirty tons of plaster a day. The woods used in the manufacture of the product will be willow, poplar and cottonwood. For the product, it is claimed to be fireproof, not subject to cracking and capable of taking on ornamental polish.

J. T. Hoover, who will be manager of the concern, is a member of the firm of Hoover & Co., and is an experienced plaster man, having done the plaster work of the state prison, Kissam Hall and the Vendome theater.

Manufacture of Wood Fibre.

J. W. Vogelsong, St. Louis, Mo., who is well known as one of the pioneers in wood fibre plaster manufacture, contributes the following with regard to the details of cost of manufacturing wood fibre plaster:

"Gypsum is as staple as wheat or coal, and wood fiber plaster is superseding all other forms of plaster, where once introduced. The basis for the manufacture of wood fiber plaster is calcined gypsum. Other ingredients may be used, such as clay, cement, shale, kaolin, hydrated lime, etc., the quantity used of each depending upon the quality, its cost, and convenience to the place of manufacture, having in view the making of a product of highest quality at lowest possible cost.

"Any kind of soft non-resinous wood is suitable for making fiber: elm, willow, cottonwood, basswood, poplar, quaking asp, etc. It is reduced green, and is so used in the mixture, without drying. It is used on the machine in bolts 24 in. long, 6 to 20 inches in diameter, and barked. A cord of wood produces enough fiber for forty tons of plaster. Our single machine will reduce enough for thirty tons of plaster in ten hours. Our single machine, with one mixer, and possibly a small elevator, will give you a capacity for the production of twenty-five tons of plaster a day, upon which you should realize a net profit of $2.00 or more a ton. The cost of equipment, for manufacturing good wood fiber, having building and power, (say twenty-five horse power) would not exceed $1,000.00 for a mill of the above capacity."

Plasterers Denounce President's Words.

Plasterers' Laborers' Union No. 36, of New York City, which has a membership of 1,300, has condemned the utterances of President Roosevelt concerning Moyer, Haywood and Pettibone, the Western miners now in jail awaiting trial. The resolution says that the language used by the president in his letter to Representative Sherman is "calculated to poison the mind of the public and the jury in the forthcoming trial" of the accused miners. And "furthermore as these men have never been tried for any crime, Plasterers' Laborers' Union sees in President Roosevelt's action a blow at organized labor," says the resolution.

Memphis Firm Incorporated.

The firm of John A. Dennie's Sons, dealers in builders' supplies at Memphis, Tenn., were incorporated as a stock company February 1 and the concern will hereafter be known as the John A. Dennie's Sons Co. The business of the new company will be conducted along practically the same line as heretofore, succeeding to the business of the old firm with offices located on Front street, and a commodious warehouse in the railroad yards a few blocks away. The officers of the company are: C. A. Dennie, president; J. C. Lovelace, vice president and general manager; M. L. Owen, secretary and treasurer. The firm of Dennie, which goes out of business with this new organization was one of the oldest in the South, having started in the supply business in 1855 when Memphis was merely a frontier Western town. For years this concern have manufactured their own lime, their kilns being located in the northwest corner of the State of Alabama, using wood for fuel from the surrounding forest and old-fashioned stone kilns. The rock is quarried from the high calcium limestone strata for which northern Alabama is well known to geologists. Mr. Lovelace, the vice president and general manager of this concern, is an Alabama man and until recently lived in Birmingham, where he has been a successful business man in other lines.

Anticipates a Lively Demand.

WICHITA, KAN., March 15.—J. H. Turner, who is a dealer in hay, coal and building material, at 535-545 West Douglas Avenue, says that he is anticipating a lively demand for all building material and supplies in this territory in the coming year. "The greatest trouble we are now having," said he, "is to get enough stuff on account of the great shortage of cars, which seems to give no hope of getting better. At the present time we are having great difficulty in getting enough Portland cement for the spring trade, which has opened up early on account of the warm weather, which came upon us suddenly. We believe that our business will exceed that of last year, which was one of the best we have had since we have been in business."

Sand and Gravel.

Get New Equipment.

The season has opened with the sand producers in every part of the country. There is hardly a sand operator who has not made extensive improvements at the plant or in connection with the equipment used in reclaiming sand, whether it be a pumping operation from a floating sand barge or sand boat on the rivers or lakes, or whether it be a bank or pit sand proposition. The feature of improvement and re-equipment has also extended to that branch of the sand industry where high class and perfectly controlled products are produced by concerns who crush and recrush pure sandstone, and in this way manufacture sand.

Perhaps there is no industry in the world that presents such a wide difference of methods as this and each and every method offers a product of distinctive differences. The value of sand deposits of every kind has increased enormously within the last few years on account of the enormous demand created by the growth of the concrete industry as well as the development of those lines in which sand for ages has been an indispensable factor. The profuse distribution of sand of some kind or another over the earth's surface gives the impression at first glance that it is quite a valueless material, at least cheap wherever it is to be considered as a commercial commodity.

This first impression is quickly dissipated when we come to a careful consideration of the subject; for the distressing lack of uniformity and unreliability as to constituents makes nearly all the sand as found in nature unavailable for scientific manufacturing purposes without considerable expense in the direction of preparing or adapting it to almost any commercial use. Some bank or pit sands have such an enormous percentage of vegetable matter or are intermixed with numerous varieties of clay that it is almost impossible to separate the silica from the objectionable ingredients. Often when the desired separation is accomplished the cost is found to be too great, the particles are too fine, and of a uniform size, or some other objection not anticipated at first appears so that numerous workings of sand pits or mines now abandoned, are to be found in almost every locality. Pumping sand from beneath the surface of rivers was at one time considered a self-washing proposition, and the regular freshet stages of the streams were hailed by the operators of sand-pumping propositions as the process of nature by which a new supply of material was brought down to feed the sand bars.

Closer investigation shows that the freshets are caused largely by the drainage of the farming lands located along the rivers and smaller feeding streams contributing a large percentage of loam, and vegetable matter which is a distinct disadvantage to the quality of the sand, and which is extremely difficult and costly to eradicate. The same objection applies to the natural sand deposits that recur every season at the borders of the lakes by reason of the movement of the waters from currents and prevailing winds.

The crude apparatus employed by the pumpers of sand are rapidly giving place to great improvements in equipment. The washing, drying and separating of sand is being undertaken upon a more scientific basis, and with the outlay of a great deal of money, for the volume of production must be kept steadily increasing in order to take care of the consistent demand regardless of the restrictions and specialized qualifications demanded. When it comes to the consideration of sand that is to be used for any scientific investigation or for consumption in the arts where reliable manufactured products are to be produced, the study of sand becomes a serious undertaking. Sand that is manufactured from pure sandstone by first being crushed and then pulverized, and separated through screens of various known sizes, reaches the highest perfection that has yet been attained. The volume of sand produced in this way is quite insignificant as compared to the amount that can be used and the cost of the process is such as to absolutely keep it from a large number of specifications where it could otherwise be used to great advantage. Again the territory in which pure sandstone can be secured is limited in extent and we have found by experience that the transportation of articles weighing as much as sand is out of the question for anything except short distances, and such sand manufacturing operations can at the most supply only a small fraction of the universal demand.

The sand supply for the most part is purely a local proposition, and this means that the dependence of the country is upon bank or pit sand, and that which is reclaimed by pumping from rivers and lake. Until recently the majority of sand operators by these two methods have known little and cared less about the contents of the sand as they reclaim it. They have considered their business as principally a teaming proposition, because in that direction has all of the trouble and expense been found and the sand itself for this reason has been considered a matter of slight importance. Now comes the well qualified engineer who will not specify a material that is not uniform and has not been satisfactorily tested. He must know exactly what the nature of the material is or he can not arrive at definite results.

The slipshod methods of doing business and crude methods of the sand operator have given place to more intelligent handling of sand and a better equipment for producing a product of a higher grade that was formerly found to be accepted. The sand of one producer who has intelligently equipped his plant, is found to be superior to that of a competitor who still operates in the same old way and the better sand is specified every time. If you are a sand operator and think that the architects and engineers are all against you in specifying your competitor's sand, just sit down and take a big think on the subject of equipment, notice the improvements that your competitor has put in and you will have the answer. Either put in equipment that will secure for your customer the cleanest and most uniform sand that you can produce at least as good as your competitor has to offer or get out of the business.

Files Suit for Receiver.

CLEVELAND, O., April 10.—That the affairs of the Lincoln Sand and Gravel Co. have been improperly managed is the charge of William H. Butler in the common pleas court, this city, in asking that a receiver be appointed to take over the business of the concern. In his petition Butler says he paid $10,000.00 for 100 shares of stock. The directors, he avers, are W. C. Jones, V. O. Johnston, E. F. Farwell, H. P. Eells, J. A. Cline, J. E. Murray and A. F. Green. The plaintiff alleges that Jones and Farwell tried to have their indebtedness to the company for stock cancelled by selling 300 acres of land in Logan county, Ill. Other complaints are that Jones as president and treasurer, both of the sand company and of the Standard Contracting Co., sold machinery to the sand company at exorbitant prices and that dividends were paid to Dr. W. C. Bruce, when none had been declared.

Purchase Better Equipment.

The Ohio and Michigan Sand and Gravel Co., of Toledo, Ohio, whose pits are located at Chilson, Mich., on the Ann Arbor railway, has recently purchased a No. 2 "D" Gates breaker, built by the Allis-Chalmers Co., of Milwaukee. This machine, which will be used to reduce rejections from a No. 5 Gates breaker, now installed there, will be equipped with straight drive, chilled iron wearing parts, smooth head and short head and concaves set for fine crushing. The product to be produced will pass a ¾ in. ring.

The phenomenal increase in the use of concrete construction during the past few years has carried with it an equally growing demand for finely crushed stone. Finely crushed stone is required for many purposes for which it was formerly considered unsuited. In order to meet this new demand for finely crushed stone, the Allis-Chalmers Co. has designed a short type of head and concaves for Gates breakers by the use of which the desired product may be obtained from standard machines by a simple substitution of crushing parts.

The Mount Carmel Sand and Gravel Co., of Mount Carmel, Ill., has been incorporated with a capital stock of $2,500.00 by C. W. Philips, Asa Wood and G. W. Cleveland.

Production of Building Sand.

We have received a request from a subscriber for figures in regard to the production of building sand during the years 1904, 1905 and 1906. Figures for 1904 and 1905 are available, but no figures are at hand for 1906. More than twice as much building sand was used in 1905 than in 1904, and of course the concrete industry had much to do with this great increase. No doubt when the figures for 1906 are complete the increase will be just as great. It may be of interest to some to know the quantity of sand produced in 1904 and 1905, according to states, and for their benefit we publish the following tables, the amount being expressed in short tons:

	1905.		1904.	
STATE	Quantity	Value	Quantity	Value
Alabama	66,512	$23,055	64,400	$16,615
Arkansas	97,431	37,244	10,385	5,630
California	1,798	2,679	1,591	1,736
Colorado	4,710	2,700	12,840	5,675
Connecticut	10,000	3,000	9,360	2,250
Delaware	110,124	44,049	.....	.....
Georgia	62,573	27,436	11,245	4,149
Hawaii	2,560	4,914	.....	.....
Illinois	244,297	111,212	338,461	148,911
Indiana	689,451	442,836	177,338	62,395
Iowa	191,688	69,964	3,761	1,745
Kansas	70,988	21,552	.....	.....
Kentucky	193,872	95,647	211,290	78,675
Louisiana	139,157	73,991	.....	.....
Maryland	172,298	86,759	100,550	79,175
Massachusetts	86,690	50,275	44,717	24,289
Michigan	263,315	148,065	69,656	30,898
Minnesota	59,405	29,230	34,500	14,800
Mississippi	6,250	2,000	4,500	4,973
Missouri	1,367,132	466,105	1,352,427	425,982
Nebraska	12,900	8,200	.....	.....
New Jersey	425,518	172,152	312,680	119,846
New York	2,644,834	1,019,786	122,255	49,119
Ohio	619,402	224,134	234,730	84,037
Pennsylvania	1,689,100	730,946	740,111	279,880
Tennessee	203,525	70,280	98,975	86,125
Texas	270,853	123,174	148,000	67,800
Vermont	3,265	1,285	.....	.....
Virginia	244,572	96,248	267,264	123,842
West Virginia	77,488	42,232	89,916	39,556
Wisconsin	84,573	47,279	39,333	24,200
Other States	11,478	6,307	1,182	564
Total	10,127,750	4,284,740	4,501,467	1,783,740

New Plant for Steubenville.

STEUBENSVILLE, O., April 2.—The McCurdy Sand Co., which was incorporated some time ago, has opened an office in room 503 National Exchange Bank building in this city, with William M. Trainer as secretary and treasurer, in charge of the new company. Mr. Trainer has resigned his position as secretary of the Steubenville Sand Co. to take his new position. The works of the McCurdy Sand Co. will be at Brilliant, this county, with the main office at Pittsburg. D. C. McCurdy is president of the company, which has a capital stock of $15,000.00. The company has leased a farm south of Brilliant and the plant will be in operation by May 1. The company will deal in washed sand and gravel and the outlook for the year is bright.

Testing New Orleans Sands.

The United States government is making a special investigation of the sands and gravels near New Orleans. The work is being carried on by G. B. Morgan, representing the Bureau of Soils Survey of the United States Department of Agriculture. He has visited various sand and gravel and sand deposits near the Crescent City, has taken samples of each and will make an analysis. This analysis should be of value to the sand operators of that city, as but little crushed stone for concrete work is used there.

The Concrete Stone and Gravel Co., of Tacoma, Wash., has been incorporated with a capital stock of $3,000.00 by Robert M. Thompson, Charles W. Thompson and J. P. Downs.

The Stewart-Peck Sand Co., of Ft. Smith, Ark., has installed a plant for the use of gas as fuel in their operations.

Sand-Lime Brick

CONVENTION PROCEEDINGS.

Report of Chicago Meeting of the Sand-Lime Brick Association is Concluded.

Perhaps the most interesting discussion that took place at the annual convention of the National Association of the manufacturers of sand-lime products at Chicago last December was that upon the subject of brick presses. There is no subject of greater importance to the manufacturer of sand-lime brick. In the absence of J. Harry Allen, who was scheduled for a paper on the subject of "Brick Presses," E. L. Young prepared and read a paper in order to introduce the subject from the standpoint of the brick manufacturers. The discussion was carried by such well known experts in the design of construction of brick presses as John L. Jackson, P. L. Simpson, W. J. Grath, L. W. Penfield and others, including the leading experts who are practical manufacturers of sand-lime brick, and who have contributed no little to the research that has brought the industry to its present state of perfection. We will take up Mr. Young's paper and follow the discussion in full:

BRICK PRESSES.

BY E. L. YOUNG.

We have all learned a great deal concerning brick presses in the time we have been operating sand-lime brick plants, and most of us have something yet to learn on the subject. There seem to be a good many problems that are peculiar to the sand-lime brick, that are not met with in making clay brick; therefore, merely putting more strength into the clay brick presses does not fit them perfectly for sand-lime brick making. There is considerable room for improvement on all presses that I have seen in operation, whether of the vertical or rotary type. What we want is a press that is as perfectly adapted to its work as the highest type of dry press is to the making of pressed clay brick, and I believe we will get it in time. I am inclined to think, as Mr. Penfield said last year, that the perfect press for sand-lime brick making will most likely be a development of the two types now in use, rather than an entirely new construction.

Most of you are familiar with both the rotary and the vertical type of presses, and these were gone into so fully at our last meeting by Mr. Penfield and Mr. Jackson, that it is not necessary for me to say much regarding the mechanical construction of either type, or the difference between them. Both have their places, and as both types are now in the hands of American machinery manufacturers, that means that they will not stand still.

Personally, I prefer the vertical type of press for my own work, and mainly on account of its double or triple pressure, as I like to be able to make high grade front brick. I am thoroughly convinced, and I believe most of you will agree with me, that to make the best sand-lime brick, that is, the heaviest, strongest, densest, and least absorbent that it is possible to make from any given material, it must be pressed from both sides, and must have greater pressure than is given by any rotary press that I am familiar with. I am fully aware, and I think we all are by this time, that the weight, density and absorption of a sand-lime brick, depend a great deal upon the mechanical mixture of the materials, and on the percentage of fines; and I think most of us have learned in the last two years that many of the troubles we laid at our first meeting to the press, really came from imperfect preparation of the materials. Still the fact remains that with the same materials prepared in the same way, the quality of the brick depends largely on the amount of pressure, and on the way that pressure is applied to the material in the molds. I do not see any way to get around the fact that a brick pressed from one side only must be weaker and more absorbent on one side than the other; while the perfect brick should have an even structure throughout. This is my main reason for preferring the vertical type of press for my own work, and I am very much interested in its development and improvement.

Perhaps I have had as few press troubles as any one who has run a sand-lime brick factory the same length of time but I would like to make a few recommendations along the line of improvements in the vertical presses, from the standpoint of a practical operator.

First, I would suggest that the toggles be bushed with brass, so that by getting new brasses and new pins, the wear can be taken up at the brick factory, and thus avoid a long shut down, and an expensive trip to the machine shop.

That there is a great need for an easier and more accurate method of adjusting the lower plunger plates, I think that no one who has operated a vertical press will deny. This is a more serious problem on some presses than on others, but all vertical presses I have taken note of could be improved along these lines. As it is, the operator who finds that his plunger plates are not coming up high enough, or are coming up too high, has to take a wrench and loosen a number of screws; then insert or remove a piece of metal, which he thinks will be about right. After finishing up the job, and turning the press over, he finds that he has got in too much or too little metal, and the work has to be done all over again. This adjustment, I think, should be made with a screw and wedge, so that the exact height desired can be got at quickly and accurately.

I would also recommend a wide bearing surface for the charger where it rests on the back mold table. The plan of putting narrow strips of iron or steel on the back mold table or the charger, with the idea that they can be quickly and cheaply renewed, I find does not "pan" out at all in practice. A wide bearing surface on the charger could be easily renewed and if the mold table becomes too much worn, I think it would be more satisfactory to get a new one than the present arrangement.

I would also recommend that the press of the future be so built that the weight or strain in working will be *downward;* that is, against the bottom, or solid part of the boxes, and not up against the caps, as it is now. Also that the belt pull will come from the bottom, and not from the top, as is the case with practically all the vertical presses. This would give greater power, and any one would admit that when the pull is from the top, the loose side of the belt tends to leave the pulleys; thus causing less contact with them, and consequently more slipping. It is usual to have a slipping belt in the ordinary sand-lime brick factory anyway on account of the dust.

The change from the old solid mold liners to the saw-blade steel facings I think is a move in the right direction, as it tends toward cheapness in keeping up the machine, but the changing of molds ought to be very much easier and quicker than is possible with most presses. The mold liners last so much longer when making clay brick that it is not usually necessary to change them oftener than once or twice in the season's run, so a few hours' lost time does not matter so much; but this is one of the main points where a clay brick press does not meet the requirements of the sand-lime brick manufacturer. Where the molds must be changed every week or ten days, this lost time is a very serious matter. Usually the front table of the machine must be taken apart to get at the mold, and the mold itself must be assembled in the press piece by piece. This means not only the lost time of the men lying idle during working hours, but the lost time of the press itself, when it is not making brick. The edges and corners, and the general appearance of the brick, which governs the price obtained for them, depends so much on the perfect mold liners that all sand-lime brick presses should have mold liners cheap enough to be changed every week, and the molds should be so easily and quickly changed that no time need be taken from the working hours of the plant.

The push-out on the vertical presses is another good field for improvement. Of course the strongest argument in favor of the rotary presses is that they do not push out the brick, but they are picked off from the lower plunger direct. This is certainly a strong point, but it is not as strong as it would be if it were not for the difficulty of steam-heating the plungers on the rotary presses. If the plunger plates are thoroughly cold, the brick will stick to them, and if the brick sticks to the plate, it is impossible to either lift it off, or push it off successfully. There seems to be little difficulty in steam heating the plungers of the vertical presses, and with an improved type of lift-out, which would do away with all bump and vibration, I think the injury to the brick from that cause could almost entirely be done away with.

Whatever make of press is used, it ought to be cleaned thoroughly every day. If no other person is available to do it, this is a good job for the night fireman. It pays in the life of the press, and in the work it does. All brick presses are usually a good deal more expensive than are engines, and they have harder work to do; but the engine generally gets the most care in the way of cleaning and oiling.

Mr. Jackson: I probably am responsible for the introduction of the rotary press in the American market. On my first trip to Europe I felt that if we should have our pressure from both sides, we would get better results. The shop that the machinery was built in that we got our first press of, built three types of presses: a horizontal press that you took the press one brick at a time and you reached over the end of the press and picked out your brick just at the right time. You had to be right there on the sixty-fourth of a second or you would lose your brick or you could not get it at all. That didn't appeal to me. The next press my attention was called to was the press that we have now—the press from one side; but it didn't appeal to me from a mechanical standpoint. I am nothing but a machinist. I thought the press that pressed from both sides would make the better brick. Mr. Komenick has the hydrated lime system; he introduced it and personally has installed more plants than any other manufacturer throughout Europe. He says to me: "Mr. Jackson, don't take this press; and I will give my reasons why you don't want to press the bricks from both sides. We have them in quite a number of factories here of our own, giving very good satisfaction; but under the conditions that you will probably run across in America you will find out they are going to bother you."

I visited at least a dozen plants in Germany, and went over to Holland, where I found one plant that had three presses in; a number that had two in; and they had the press that worked from both sides. They wouldn't have anything else; they were simply the only thing they had. Of course, there was a little more mechanism to the press working from both sides than the one that pressed from the bottom. The price was the same and I thought we were getting a little more money; so we imported the press that worked from both sides. We ran that plant about five months. Then our troubles commenced. The table revolves, and it was a job to catch that table just at the right point. The bottom plunger worked from the bottom; the top plunger had to meet it exactly. If it was out of the way a thirty-second of an inch, something happened, either breaking of the shaft or gear; and the brick were pressed, the lower plunger came up from the bottom; the top plunger came down from the top; you pressed your brick in the center. If your liners were worn a sixty-fourth of an inch, you had to force that brick up through that opening that was smaller and your brick were checked—crystallized; it cost us over one dollar per thousand for maintaining of liners, alone, on that press. Then the breakages cost us pretty nearly $2.00 a thousand to maintain or keep up that press. We had orders for brick; but the stockholders that were in with me coundn't stand it. I went over to Europe and investigated the other press that Mr. Komenick had asked me to take up. I thought, "Well, that brick would necessarily be weaker on the upper half than on the lower half." I took it up with Mr. Komenick and he said: "It would naturally look that way. Now I want you to make a test here—I have a press." I got in there in the evening; and we prepared the material and we pressed those brick there that night—put them in the hardening kettle; in the morning we took those brick out about 10 o'clock; and he put a couple of fellows at it with a hack saw. We sawed those brick in two; I marked them, cut them crosswise and lengthwise; there were four brick and we tested them; and there was not any perceptible difference in the pressure; it was in the

filling of the pockets and the preparation of the material. I took that material and put it in dry, which we all try to do; we try to press our material too dry. Of course, there is no resistance; and naturally the top of that brick is softer; but you get that material moist enough to be pliable and you get as near uniform pressure on the brick on the top as you do on the bottom. It has been in use over three years; the last day it run was last Saturday; it made 21,000 brick; we have turned out from 120,000 to 126,000 brick every day during the entire summer.

We have made improvements over the German press. We find that the conditions vary: every plant that we put up is a proposition entirely of its own. A press that will work in Mr. Jones' plant and do good work—go over to Mr. Brown, in York state or in some other county, it is an entirely different proposition; and we have got to adjust our press; we have got to put on changes; and we find that by getting the opinion from the different plants that we have installed and combining the different features, that we have got a press that we think does away with the objectionable features that this gentleman has referred to by pressure from the bottom. Also, by having your pressure at the top, if that wears a thirty-second or sixty-fourth of an inch the wear is uniform. The only difference there is in your brick, it is a little larger. Your brick does not crystallize or become crushed or checked by forcing it up through that liner where your pressure is in the center; because it releases itself just as quickly as it comes up. The cost of liners in that way is cut down quite an extent. We have run one set of plated liners that we made over 3,000,000 brick with. I think we run it part of this season: so we got pretty near 5,000,000 brick with one set of liners by turning the steel plates over. It is somewhere in the neighborhood of 5,000,000 bricks with twelve pockets in the press.

Mr. Duerr: I would like to ask one question. I have seen nearly all the rotary presses in operation; and one difficulty I have seen has been the proper filling of the pockets. They do not seem to be able to get the pockets full. One of the criticisms that is made on our brick is that the corners crumble away; and I have noticed, where that happens, that it seems to be on the side of the brick where the pockets did not quite fill. I have seen the brick in plants where you pick them up and you see that the corners are honeycombed; and that, to my mind, seems to be one of the principal difficulties; and I should think that the machinery men could remedy that.

Mr. Van Glahn: We manufacture a machine and overcome that difficulty entirely. We have an agitator by which we stir the material, and then another one turns up and presses the material into the mold. We are using the round stone silica, weighing 90 pounds to the cubic foot; and we put 5 pounds 10 ounces of that material—into a brick 2¼ in. thick, 4 in. wide and 8¼ long; and we have no trouble whatever about corners—the corners are perfect all the time; and we can take wet material or dry material: it doesn't make any difference. We can handle one just as well as the other—no trouble whatever. I speak of the "Perfection" press.

L. W. Penfield: Will some one explain the difference between the method of feeding adopted in the Komenick press and the Perfection press?

Mr. Jackson: I can explain the Komenick press. The material is taken from the mixer. We have what we call the short circuit system. If we can find the material adapted to making brick by this system, I found that it was on all the commercial successful brick plants in operation throughout Europe—happened to be over there during the time Prinz Henrich was over here; and they would have given an American anything at that time—and they let me got through their works and I wasn't looking for a commercially successful plant. We take our sand from the pit, if it is not too wet: if it is, we have to use a dryer to a certain extent; we put that on the floor; we have our hydrated lime—we hydrate our lime for tomorrow's run; we put that lime in our quenchers today by adding a certain percentage of water, which we have to determine by the amount of lime we are using. Then that lime is hydrated; the hydration is completed while the bricks are being hardened; then that lime is put into an elevator and pulverized; then we take that hydrated lime and we use it, etc. That is the Saginaw system that you gentlemen have laughed at. We take two shovelfuls of sand, one shovelful of lime, two shovelfuls of sand and we throw it over into our booth. The elevator takes it up and puts it into the mixer, where it is thoroughly mixed by the time it gets into our agitator. We have an agitator at the top of the press that stirs and mixes the material; and of course it depends entirely on your weighing or pocket of the press how that material is fed in. Conditions vary. Sometimes the brick are not as good as we would like to see them; but the filling of the mold is with the agitator or machine that we have on the top of the press; and we try to get our pockets filled uniformly.

L. W. Penfield: Now if I understand the Komenick press (which I have heard described by one or two of our friends) in this agitator that works immediately above the molds there are arms revolving passing down to the bottom of the agitator; and those arms are so placed that they scrape the sand into the mold pocket and fill it in a fairly positive manner. I would like to know in what respect the Perfection differs from that method, in order that we may determine whether the Perfection press has any advantage over the Komenick press in filling molds.

Mr. Van Glahn: We have our agitator made in the shop. Our molds are near the center of the table; they fill more easily than those on the outside of the table. We have got a hopper that holds about a yard of material; we keep that full of material all the time. We have six sweeps, all following one another in the same direction.

Mr. Grath: I have been in the clay brick business for a good many years; and from what experience I have had in the sand-lime brick business, in building sand-lime brick machines I do not see a particle of difference in filling the mold pockets when you are making sand-lime brick than you do in the making of clay brick. In the latter, if you get your semi-dry clay too damp you have some difficulty; and the best method that I have discovered in overcoming the non-filling of the molds in front is partly as Mr. Berg has said: make your charger stroke longer so that you have about two inches of clearance in front before the lower plungers go down. Then when the lower plungers go down and the charger is all the way forward, you have got two inches of clay or sand-lime brick in the front end of your charger; when your charger comes back it levels up the mold all the way through from front to back and you get a uniform feed. I built a press that was shipped down to Chili and made brick thereon 12¼ in. long; and when the toggle came down to press it the molds were filled absolutely uniformly. There was not a nick or a corner that was not perfectly smooth. I stopped the press before the plungers came down; and you could not feel any difference between the front part of the mold and the rear part of the mold; and when you have perfect conditions like that, you get an absolutely uniform pressed brick throughout.

In making dry-clay brick I had some experience which I think applies to sand-lime brick, and that is this: I ran a hydraulic press for ten years; and in determining whether absolutely necessary to get pressure from both top and bottom, I took two large blocks of wood and put them under the top plunger and made those blocks of wood sufficiently long so as to allow the top die plates to enter the mold about an eighth of an inch, which practically gave no pressure from the top. Then I finished the pressure from the bottom; and there was much heavier pressure than anything you can get on a mechanical press. The brick were so hard pressed in the lower part of the brick that when they came out of the mold (all of the latter lined with self-hardening steel of the highest grade) the brick for a quarter of an inch were black; then they gradually got lighter in color until at the top of the brick they were of the same color as the clay, and the top was so soft that you could easily brush the top part of the brick off without any effort hardly whatever. Then I reversed the thing and got all the pressure from the top and none from the bottom; and in that case the bottom part of the brick was so soft that we couldn't shove them out; and while the same may not apply exactly in the same ratio to a sand-lime brick, the comparison is there also.

I find that in shoving out sand-lime brick it does not require near the pressure as it does in the dry clay brick. That is caused by the adhesiveness of the clay to the sides of the mold, which is not the same in sand-lime brick. Now on my hand press, in pressing dry clay brick it takes a very high pressure with the lever to get a dry clay brick out of the mold; whereas, with the sand-lime brick with the same press I can lift the brick out with one finger. I have done it on Mr. Duerr's plant, who has two of my presses there; whereas, with the dry clay brick it requires both hands, and then you have got to push some. That may account somewhat why a sand-lime brick pressed from only one side would be better in quality than a dry clay brick pressed from only one side; but still I am of the opinion that a sand-lime brick pressed from both sides will give a better quality brick than one only pressed from one side.

Now about adjustiveness. On a properly constructed press the bottom die plates can be adjusted so as to be raised a sixty-fourth or a thirty-second of an inch, and so as not to consume over one minute; the same thing can be said in adjusting the thickness of the brick. If the press is properly constructed you can adjust the thickness of the brick in two minutes. In a vertical press, which I advocate, my opinion is that a vertical press should be built as simply as possible, so that every movement can be seen, so that every part of the press can be gotten at, so that the press will stand, without fear of breakage, a much higher pressure than what you actually require for making A1 brick. If a press is constructed in that manner, the press can be operated so as to make a fine brick of a heavy pressure at the same time without testing its mechanical strength; and in that way you can run a press practically continuously every day. The sand-lime brick of course requires a somewhat heavier, but not much heavier, pressure than the clay brick; and if a press is so simple that you can get at every part and see every part; and if the parts are constructed so that they will stand a much higher pressure than you require, there is no reason why you can not run a sand-lime brick press as effectively as a dry clay press.

Mr. Van Spanje: We use a rotary press; and to a certain degree it is true that there has always been a little trouble in the filling of the mold, not so much an efficient filling but that at some times the mold would be more filled than at other times according to the condition of the material. But about six months ago we made a device whereby we can control the supply in the mold to such an extent that really it has no effect at all. We have no trouble at all any more with that.

R. C. Penfield: What is the device?

Mr. Van Spanje: That is a question. I am not a machinist. I am a brickmaker. If I was in the machine business I certainly would advertise it and tell you what it is; but it is a device put on by ourselves and made by ourselves in our own machine shop.

Mr. Squier: You remember what Dr. Lazell said about the testing of brick; and is it not true that a sweep arm filling the pockets packs more sand on the one side of the one end than it does in the other? If so, isn't it true if we can take the experiments of Dr. Lazell's work as a fair criterion that there is more sand, more material, in one portion of the pocket than there is in the other? If so, that portion receives the maximum amount of pressure and the balance if it is graded off to the point where the least material rests. Now how can you obviate it?

Mr. Simpson: This question of mold filling is quite a serious one; and there are a great many different views regarding it. It has been an object of controversy among clay men for twenty years, to my certain knowledge. It doesn't seem to me that the question has been solved yet. Furthermore, nearly every machine man has a different idea about the matter and builds his press according to these ideas; and it will vary from the other fellow's press. We can not all be right in the matter. There must be a right way. Some of us are doing it wrong; there is no question about that. Clay men have not gone into it at all with the same scrutiny as the sand-lime men, for the same reason. It has not been the subject of controversy in their convention; but here it is brought up every year. I am thoroughly familiar with both types of presses, both the vertical and rotary; and I disagree with some of the observations made by some of the builders of vertical presses, especially, here, as to how they fill the mold. Mr. Berg, who has had a good deal of experience in that line intimated the long shovel as a solution. Now Mr. Berg is right about that; but he omitted to mention—and in fact the speakers heretofore have omitted to mention—the very important fact in regard to the filling of the mold, especially in a vertical press; and that is, that when the charger gets out—it had to be out two inches beyond the mold before the lower cross-head dropped. When the cross-head drops—that has two disadvantages: one is, that the cross-head has got to drop very quickly; the second disadvantage is, that in the reaction, when it comes back again, it decidedly draws the sand or clay or whatever you are filling into the mold, back into the back end of the mold: there is no doubt about that. It has that

effect that Dr. Lazell spoke of yesterday, in giving a little more density to the back than to the front. That is what I have been trying to avoid all this year. There is one point I want to make in filling the mold (and what has been lost sight of by the previous speakers) has been the impetus or momentum of the material towards the front end of the mold. Now I have tried in the construction to get the momentum—to take advantage of the momentum after the charging in order to throw the material to the front of the mold before the reaction begins and back. Now in order to do that—to do what Mr. Grath contends would be fatal: there will be no momentum, there will be no impetus of that material to the front of the mold. If I begin to drop my charger in advance of the brick being entirely out, I get a certain amount of material into that mold when the charger is going out and I take advantage of the impetus of the material towards the front of the mold in order to overcome the tendency to drag the material back to the back end of the mold: in other words, there is a compensation there that I have been trying to get at. How successful I have been I don't know; but at the same time that is the principle that I go on. The long movement that Mr. Berg speaks of in addition to that is perfectly correct.

Mr. Grath: I have to take exception to Mr. Simpson's remarks. I have tried mold filling in every way that you could possibly try it. As I said, with this hydraulic press I could start the charger sooner or later, any time I wanted to: and I found that in dropping the lower plunger before the charger was all the way out, you would empty the front end of the charger before it came out all the way; the result was, where there was a lagging of the filling of the front of the molds you had no more charge in the charger to fill that space and, furthermore, when you filled up the back end of the mold first, which you would naturally have to do if the lower plungers would drop first—that would get the heavy weight of the material in the charger in the back end; whereas, the front end—even if you had enough in the charger to fill up the mold the front end would not have the weight of all the material and the front end—the material in there would be in a more flaky condition. Now, if you drop the lower plungers or lower arms when the charger is all the way forward and you have more material in your charger than you actually require to fill the mold, you get the whole weight of all the material as the lower plungers drop; and I also disagree what the result of that is—that you get a uniform fill of the mold. I disagree with Mr. Simpson when he says you have got to drop it quickly and with a sort of thump. If your press is constructed properly it can be dropped quickly without a thump; and it can start to drop before the charger starts to go backward and there is a dead pause for a fractional part of a second in the time it comes forward until it comes off; and I want to take advantage of that dead pause and before the charger comes back your lower arm wants to be down all the way. Then if you have got material in the front part of the charger left, you are bound to have a uniform fill. I have worked that out carefully on the hydraulic feed and I have taken advantage in that of the experiments I am making.

L. W. Penfield: This subject is evidently intended for the press makers; and we are taking advantage of it. There are two points that I wish to discuss briefly: one in regard to the rotary press that we know about it; and one or two regarding the vertical press that were brought out by the paper that was read. The additional word I wish to say in regard to the feeder of the rotary press is, this: so far as I know the rotary presses all have a feeding hopper. In that hopper there are one or more horizontal moving arms to agitate the material and to carry it to the opening leading down to the press mold and, incidentally, to fill that mold. That arm moves usually with the motion of the press table; so that it carries the material forward; and when the press table stops (that is, when the mold table stops) the arm passes over this opening leading down into the mold, crowding the sand down into it and forward into the front part of it. If the action stopped there the mold would be filled more firmly at the front side than at the back side of the mold. By the back side I mean that which is following the motion of the table: but when the mold is charged the table moves and draws the surplus of sand from this mold and pulls it back toward the back of the mold, with the result that the action of filling the mold pushes it firmly to the forward side of the mold; and the action of the press when it starts up drags it back to the back side of the mold; and if the material is very moist or sticky there is quite a tendency for the back to be filled more than in the front; whereas if the back is dry and in good condition for pressing, the material is fairly distributed in the mold as the result of those two actions and you get a firm good brick.

I think that all the points that were mentioned in the paper (this is advertising) as being desirable improvements in the vertical press, are already included in the vertical press which we are offering to the sand-lime brickmakers; and I would be pleased, indeed, to have an opportunity to explain those details to anyone caring to take it up with me at any time today.

Mr. Ebert: My understanding of Mr. Lazell's paper yesterday was that the back end of the brick made on the rotary press was the hardest; that is, the end next to the center, instead of being either one side or the other. Now, the rotary press would have a tendency to fill the mold more on one side than the other, instead of more on one end than the other; while the vertical press would have a tendency to fill it more on the end than the side. As Mr. Penfield just explained, the filling of the mold on the rotary press would fill it more on one side than the other; but Mr. Lazell's paper stated that one end of the brick was stronger than the other.

Mr. Duerr: I have noticed that same filling of the mold that Mr. Ebert speaks of as being on one side only; but whatever observation I have been able to give to it, toward the outside side, there was less filling apparently than toward the back; and I should think that would account for that strength—difference in the strength between the front of the brick and the back of the brick: in other words, on the front outside corner was apparently not filled near as much as the back outside corner: which, of course, would make a difference in the strength of the brick.

Mr. Simpson: In my remarks heretofore I did not speak of the rotary press; but in the rotary press that I have built I did not copy the German idea of filling the mould at all. I have several objections to it: the main one was its non-applicability to the design of the machine; it was cumbersome and takes a lot of room; and I did not think it was quite the ideal plant; so I designed my filler with forced feed: in other words, I have got a hopper; I make two bricks at a time pressing both ways; and I have a hopper, the inside whereof is an arrangement whereby I force that material into the mold while the table is standing still. I have an arrangement made whereby the force can be applied at any point of the mold so as to overcome the dragging of the sand or material to one end; in other words, I can fill it more at one end than the other, so as to obviate or compensate for that dragging effect that the table has in moving around. I have only built one machine so far; and I have not run it enough, probably, to tell you how successful I have been about it; but so far as I could observe from what I have run I think the mold is filled very well. I couldn't see any difference between one end of the brick and the other.

Mr. Jackson: I would like to have just a few words regarding that. The first press that we had made was on a small design and instead of running from the center out the pockets were parallel, or the round way of the table. And we noticed that there was a difference in the end of the brick, one being a little softer than the other. In our large sized press the pockets run out in that way (indicating). We have two series of arms spoken of in the Perfection press; one that scrapes, or an agitator, and then the other does the pressing, or forces the material down. The material—the preparation of the material—has a great deal to do with how the material is fed into your pocket.

Another thing: you have got to have your magazine or the agitator about so full of material. If it is half full you will notice as your brick are being taken off from the press, the press men know whether that brick is pressed too hard or not enough. Well, if your agitator is half full of material, with a press constructed right you have got a hand-wheel at the foot of your operator. He simply raises up his foot and gives that one or two revolutions, which admits more or less sand as the occasion is. The more material you have in your magazine, or agitator, the more you have in your pockets; and of course your press is designed to stand only so much pressure and still you want to get enough pressure in there to give you a good brick and that is under control of your operator at all times. It does not take a half minute or two minutes to adjust the amount of material that is in there. It is instantaneous. The minute a man takes that brick off from his table his sense of feeling is better than anything else. The man is used to that; the minute he puts his hand on that brick, he knows whether it is pressed hard enough or too hard. It is under the control of the operator, not under the control of the machine man, because he is not there; the operator has got a good deal to do with it.

Mr. Simpson: Talking about the wheel, Mr. Jackson speaks about using the foot. I notice this difference between clay men and sand-lime brick men. I have seen that feed regulator not touched at all a whole day in the sand lime brick plants—not touched a whole day, regardless of the material being handled; it doesn't make any difference. Now among clay men they move it every few minutes. They adjust that. Among sand-lime brick men they don't seem to regard it as anything. Now then, there is another peculiarity. Among clay men they have a man there that understands the press, generally speaking; among sand-lime brick men it doesn't make any difference whether Tom, Dick or Harry manages it; it is all the same; and therefore the remark of yesterday by Mr. Duerr went right down to me, because I have been through that; his words were "fool proof"—making the machines fool-proof; and we have got to do it; we designers have to do that actually, have to keep in mind one thing, of people putting on men, ignorant men that don't know anything; and it seems to me that the sand-lime brick men ought to go into a well-regulated clay establishment and see how their presses are run. It is a different thing, altogether.

Mr. Grath: What Mr. Simpson says is a fact; there is no question about that; and the way the clay brick men generally get somebody to understand the press more thoroughly than the balance of the men is by paying them 25c a day more. I have two men for operating, or two young men. These two young boys, 18 and 19 years of age—we pay one of them $1.75 and the other $1.50, and in some instances only $1.25. That young man, making 25 or 50 cents a day, seemed to take a special pride to see that the brick in every revolution was as nearly alike as possible; and he would move the clay regulator I venture to say a dozen times in an hour. He would go around as soon as the dinner hour would stop and see that everything was in order. He would take a shovel and clean the thing up and he would do that of an evening. He was getting paid for that and he took a pride in that; and in the sand-lime brick we ought to pay somebody that tends to the press a few cents more a day—hold them responsible for it.

New Firm is Organized.

MONROE, MICH., April 2.—The cement and building supply business of August Radtke has been reorganized by the formation of the Radtke-Walter Co. with the following officers: August Radtke, president; Frank P. Walter, general manager, and August Radtke, Jr., vice president and treasurer. The office has been moved from the former location to the Radtke Building just south of it, hitherto occupied by the K. & K. Coal and Ice Co., and the building will be occupied jointly by these two concerns. The room has been remodeled and refitted and presents a most inviting and neat appearance.

The growth of the cement business under Mr. Radtke has been rapid and had reached proportions which made it impossible for him and his son to look after all the details in the manner which they wished, and this led them to decide to take Mr. Walter into the firm. Mr. Radtke will look after the manufacturing part and his son after the bulk of the office work and correspondence. Both these gentlemen are so well known to practically everybody in the city and county that introductions are not needed. Frank P. Walter will have charge of the business management, a position for which his past business experience has well fitted him. He lived in Monroe about seven years, but left for Milwaukee in 1878. Then he went to Tennessee, where he ran a wagon spoke factory, employing about fifty hands. He sold out and came to Monroe about two years ago, this being the home of his wife.

Looks for a Banner Year.

COVINGTON, KY., April 2.—T. W. Spinks, dealer in building supplies, says that from the present outlook that business will be good and that this will be the banner year in this city. The building outlook is encouraging and the city has already commenced letting contracts for street improvements and sewers in large proportions. The city work this year will greatly overrun that of last year. Mr. Spinks has just completed a modern brick plant at a cost of nearly $100,000.00 and the capacity will be from 60,000 to 65,000 bricks a day. He has already taken orders for nearly 3,000,000 brick and has quoted prices on 2,000,000 more.

Clay.

Characteristics of Glacial Clays.

Glacial clays are those brought down by the glaciers on ice-rivers. Most, but not all, of the thick coating of glacial debris is made up of unsorted material. In it the clays are mixed in all proportions with undecomposed rock particles, and with rock flour (silt), both derived from all kinds of rocks. This boulder clay is probably more variable in its composition and properties, and more difficult to use than any other variety with which clay-workers have to deal. Occasionally a deposit of this material is found whose properties fit it admirably for the manufacture of certain kinds of ware and sufficiently uniform in composition and texture to furnish an abundant supply, but this is not usually true. The conditions under which they are deposited usually make the boulder clays exceedingly variable, as they occur in pockets rather than in large deposits, hence the finding of heavy deposits of boulder clays, suitable for use in the manufacture of any grade of ware, even the best, is not to be considered as impossible, but rather as unusual.

The melting of the ice-rivers of by-gone ages, not only caused the decomposition of great quantities of debris, but produced large amounts of water as well, and as this water moved away from the points where it originated, it picked up more or less of the boulder clay, and after carrying it for some distance, sorted and redeposited it. To this sorting action the beds of sand and gravel, sand or gravel, found in glacial deposits, and many of the hills and ridges of sand or gravel, which rise above them, are due. It is to this action, too, that we owe certain deposits, often small, but sometimes very large, of exceedingly uniform clay, free from pebbles or from any considerable irregularities in structure, composition or properties. It is believed that these masses were laid down in lakes or ponds fed by streams which before entering the pond, had so far lost their velocity that they had dropped all the gravel or sand which they were carrying and so brought only the fine clay-like materials which settled in the quiet waters.

When the ice front retreated, it left a generally level, but more or less billowy surface behind it. This character is given to the surface partly by the unequal distribution of debris in the ice-mass, and partly by the fact that large pieces of ice often break from the retreating cliff and are buried in debris before they melt. This cover causes the melting to go on very slowly and as it progresses, the covering gradually settles and forms a depression, which subsequently becomes a pond.

Another factor which tended to produce these ponds or lakes was the formation of small ridges at points where the ice front became practically stationary for a short time during its retreat. These ridges ran across the natural depressions which ordinarily furnish surface drainage and impounded the water. These ponds were gradually small, and the amount of material deposited in each was also small, but large and deep depressions were occasionally formed, and in these extensive masses of peculiarly uniform clays, considerable deposits having just the opposite character are not very unusual.

As the water flowed away from the neighborhood of the glacier it formed large streams which carried great quantities of glacial material in suspension. These it worked over, assorted and deposited the beds so formed, differing in no way from those formed of clays transported in another manner.—*Illinois Geological Survey Report.*

The Wausau Tile and Brick Co., of Wausau, Wis., has increased its capital stock from $12,000.00 to $20,000.00.

The Gulf States Brick Co., of Beaumont, Tex., has been incorporated with a capital stock of $250,000.00 by R. M. Loeb, Sam Park, T. J. Feibelman and R. H. Hallowell.

How Water Forms Clay.

The water which circulates near the surface of the ground is almost entirely derived from rain. As water falls through the air it dissolves small quantities of carbonic and other acids and so reaches the surface in the form of a weak acid solution. The rain-water falling on the ground may be divided into three portions, of which the first, much the smallest, is immediately converted into vapor and rises; the second, the run-off, does not enter the ground, but slides off into streams near by, while the remainder sinks into the ground. This ground-water represents a varying percentage of the rainfall, depending on the physical condition of the surface layers. It may represent practically all the water that falls or only a very small fraction, but, except in the driest regions, it is always sufficient to keep the surface layers moist, and the chemical forces of the soil active. As rain-water soaks into the rocks it carries its dissolved acids with it and so, says the Illinois Geological Survey Report, brings them into contact not only with each rock particle, but also with each molecule of which these particles are composed, and as this contact usually occurs under conditions which make carbonic acid stronger than the silicic acid of the rock, a reaction takes place and the former replaces the latter.

Rock-forming minerals are usually complex salts in which several bases are united with silicic acid. Some of these bases are more strongly held by the acid than others, and it happens that those held with least force by silicic acid are most strongly attracted by carbonic acid. Potash and soda seem to be attacked first, then lime and magnesia, then iron, and lastly alumina.

The statement is commonly made that carbonic acid enters the compound and first breaks up the union of the alkalies, potash and soda, with silicic acid, uniting with the bases and setting the silicic acid free; that it next attacks the lime and magnesia in the same way, and finally the iron, leaving the union between alumina and silica undisturbed. This would produce, in place of orthoclase, carbonates of potash, soda and iron, and hydrous silicate of alumina with free silica, so that this statement does not seem to be strictly true. The real reaction appears to be that carbonic acid breaks the complex silicate into its elements and that these elements reunite to form a large number of compounds better suited to the new conditions. The change is often so complete that even the union between water and silica (which forms silicic acid) is broken, and they unite in different proportions forming an acid with different composition and properties.

When drainage is defective, and the ground-water becomes saturated with dissolved salts, it often happens that the decomposition of a single complex silicate gives rise to a large number of simpler salts, some of which are silicates and some salts of other acids.

Exhaust Steam Can Pay Dividends.

Although most brick manufacturers are bemoaning the state of the trade, and the smallness of their profits, there are still a large number who might find far less cause to grumble if they availed themselves more fully of the "little losses" which take place continually in their works.

The heat from exhaust steam is very considerable, yet many clay workers permit it to escape into the air instead of employing it for warming or drying purposes. Under the ordinary conditions of brick manufacture exhaust steam contains at least four-fifths of the heat of live steam, and to waste this in these days of low profits is little less than a crime. Use your exhaust steam to increase your dividends!—*Brick and Pottery Trades Journal.*

Brick Merger Goes Through.

NEW BRITAIN, CONN., April 2.—The much talked of deal whereby the Federal Brick Co., of Providence, R. I., will absorb the Central New England Brick Exchange, consisting of yards in this vicinity, has at last been consummated. The Federal company agrees to take the output of the local yards for the next five years. The companies included in the deal are: C. P. Merwin Brick Co., of Berlin; R. J. Clark, of East Berlin; J. W. Holmes, Donnelly Brick Co., Standard Brick Co., Tower Bros. Co., New Britain Brick Co., Park Brick Co., Phenix Brick Co. They will have a total capacity of 88,000,000 brick. The American Brick Co. will not enter the new merger.

Will Reduce Cost of Bricks.

SAN FRANCISCO, CAL., April 15.—The bricklayers of San Francisco will manufacture brick and reduce the cost of that material to the figure at which it was sold prior to April 18, 1906, and possibly less. Bricklayers Union No. 7, at its meeting held March 18, decided to acquire a site for a brickyard, manufacture its own brick, and deliver it in San Francisco at a figure which will greatly encourage property owners and contractors, and reduce the cost of permanent structures to a minimum. This will aid materially in rebuilding San Francisco in a substantial manner at the lowest possible cost. The union has received assurance of a capital of from $200,000.00 to $500,000.00 for the purpose of acquiring a large and first class plant with a capacity of 1,000,000 brick a week to start with, and room for increase to meet future requirements.

Practical and experienced brickmakers, members of the union, have volunteered to lend their best efforts toward making the proposed enterprise a success and a credit to the craft. Assurance has also been received from the international organization that every union of the craft throughout the United States and Canada, and their 110,000 members will aid with liberal subscriptions in the rehabilitation of San Francisco. It was stated that the price of bricks has been advanced from $10.00 a thousand to $15.00 since last May, and that brick can be delivered in San Francisco at $6.00 a thousand. A committee was appointed with full power to act, to secure a suitable site for the proposed plant, and active work is to be commenced at the earliest practicable date.

A short time ago it was feared that there would be a serious disagreement in San Francisco between the bricklayers and concrete workers, and, as a natural consequence, the work of active and rapid habilitation of the city would be greatly retarded. However, the bricklayers have decided that its members would continue to work on concrete buildings in harmony with concrete workers, as any friction was liable to be misinterpreted, and the unions are determined that nothing shall be done which might in the least hamper the reconstruction of San Francisco.

Kaolin Deposit Discovered.

SAN FRANCISCO, CAL.—A vast field of kaolin has just been uncovered on the White river near Porterville in Tulare county, Cal. Under a tract of ground 1,200 acres in extent, there is said to be a deposit of kaolin (or fire-clay) over twenty feet in depth. The kaolin has been submitted to several severe tests, and has endured over 1,500 degrees of heat without showing the least indication of yielding. This discovery, made by the people of Porterville, has caused considerable excitement, and prospectors are endeavoring to find other deposits of this valuable material in other places near the tract of land where the kaolin was recently discovered.

The Crucial Fire Brick Co., of Rome, Ga., has been organized with a capital stock of $30,000.00 by R. W. Graves, J. L. Bass, R. P. Yancey, C. D. McCollister, Hamilton Yancey, C. N. Fuller, John M. Graham, R. A. Denny, and S. A. Marshall.

The Richmond Brick Co., of Richmond, Ind., has been incorporated with a capital stock of $25,000.00 by Richard Sedgewick, Albert D. Gayle, Frank Taylor, Chas. E. Shiveley, Geo. W. Miller, James W. Harrison, Caroline M. Reeves, John L. Rupe, Edon Louck, and T. H. Hill.

The Enterprise Brick Co., Mountain View, N. J., has been incorporated with a capital stock of $10,000.00 by William F. Hosier, Susie Hosier and George W. O'Connor.

The Yorkshire Tile and Brick Co., of Yorkshire, O., has been incorporated with a capital stock of $10,000.00 by E. A. Fisher, T. H. Straker, C. E. Russell, L. A. Hess and J. J. Bulcher.

The Tulsa Vitrified Brick Co., of Red Fork, I. T., has resumed operations after a shut down of a month for repairs.

J. Watts Kearney & Sons, of New Orleans, La., have recently established a brick yard in that city.

The Wisconsin Granite Co. has begun operating its plant at Waupaca, Wis., for an all summer run. The rock is of the hardest granite and is crushed in four sizes for streets. The company will employ about fifty men and the output will be from five to ten carloads a day.

Side Talk.

Tht New Peerless Catalogue.

The Peerless Brick Machine Co., Minneapolis, Minn., has just issued their 1907 catalogue which is fully illustrated and explains the workings of the now famous Peerless machine. The catalogue is fully illustrated to show the machine as it appears in actual operation and samples of six different varieties of regular and special shapes of cement brick made on the Peerless brick machine are shown. A number of handsome buildings constructed of cement brick that were made upon the machine are exhibited as a part of the catalogue. A few of the good points of the Peerless machine are contained in six brief paragraphs as follows:

1. It is operated by one man. 2. It is substantially made of iron and steel. 3. Any man can operate it. 4. The brick made are uniform in size and have clean, sharp edges. 5. The brick are tamped by hand, which allows the air to escape and produce a much firmer brick than can be secured in any other way. 6. The steel on which the brick are faced is carefully planed, so that a smooth-faced brick is certain.

Speaking of the cost of manufacturing brick, they say: "It requires not to exceed two barrels of Portland cement and one and one-quarter yards of sand to make 1,000 brick. Add to this the cost of labor estimating 3,000 brick a day for each machine and you have a proposition attractive to any moneymaker. We claim that we have no competition either in the merit of our machines or in the cost to the purchaser."

Different Styles of Crushers.

The Sturtevant Mill Co., Harrison Square, Boston, Mass., in announcing their full line of crushing machinery, bring out the point of expertness in the development of several different types of crushers for various kinds of materials in the following manner: "One machine can not do all work equally well. Hard rock requires one crusher—soft material another. Coarse crushing and fine crushing are entirely different propositions; no one machine can do justice to both." Having spent years in the exclusive study of crushing propositions from every possible standpoint, they have provided a machine for each of the different requirements, and modestly remark: "We offer fifteen kinds of crushing machines, covering nearly all crushing propositions. We are unprejudiced, for there is no object in our supplying you with a Blake or gyratory crusher if your work is not suited to them. Select the crusher you want for the special work you have in hand.

"Be sure and give full particulars and get our 96-page catalogue. It is a liberal education in crushing machinery. We also build crushing rolls, grinding mills, screens, etc."

Expanded Metal Lath.

The Garry Iron and Steel Co., Cleveland, Ohio, who have made a big hit with their "Cleveland" expanded metal lath, both with the dealers who sell it, and the contractors who use it in connection with the new cement plastered metal lath and studding construction acknowledge that the demand has gone away beyond their expectations. This lath is proving universally popular with the architects wherever it is shown. It sells itself on sight and still there are some dealers who need it in their line. Fireproofing materials are coming to be more indispensable every day. The Garry brands of mortar colors, in red, brown, buff, black and purple are also enjoying a fine demand. Some very attractive metal lath and studding buildings, when plastered with a rich cement mortar tastefully tinted, have the look and finish about them that makes them worth the money they cost, and more. The architect who doesn't know these things is behind the times, the contractor who can't see the advantages needs waking up, the dealer who hasn't taught his customers to buy this class of goods had better sell out.

William B. Hough Co., 1336 Monadnock Building, Chicago, who are the exclusive agents for the sale of the well-known Ransome concrete mixer, Ransome reinforcing bars, besides a full line of contractor's equipment and labor-saving devices, furnish us with the following interesting particulars with regard to a recent test of the Ransome concrete mixer made in the city of Chicago, by concrete contractors of large experience. The mixer was operated for ten consecutive hours each day for a period of 40 working days, and reached the enormous record of seventy yards a day of ten hours, requiring thirteen men to operate it, or 5.3 yards a man, a day.

These results were accomplished because it was possible to get the loose materials into the Ransome concrete mixer at a very low level, and furthermore, the Ransome mixer discharged the mixed concrete at such a height that it was possible to discharge directly from the machine into wheelbarrows without making it necessary to shovel the concrete from the ground into the wheelbarrows. Other mixers working at the same time upon the same job required more men to keep them running and produced much less material, and besides this the Ransome mixer takes 20 per cent less power to drive, which is another considerable economy to the contractor.

The Macomber & Whyte Rope Co., of Chicago, have just closed a contract with the Illinois state penitentiary, at Joliet, Ill., for a large cableway, to be erected at the state's quarry at Joliet. The amount involved in this contract is nearly $10,000.00, and includes the complete equipment, comprising steel towers, machinery, rope, etc. The engine is to be a special cableway engine of 75 H. P., and will be driven and controlled by a 75 H. P. general electric motor. The chief engineer of the work has specified the Macomber & Whyte patent "Kilindo" non-rotating rope for this work. The main cable will be 2-in. diameter, and the hoisting rope ¾-in.

This rope was selected on account of its absolutely non-rotating, has greater wearing surface than any other rope, and is much stronger in the same quality and diameter. It is made of all round wires, and has more solidity or actual material than any other rope produced.

The United States Drying Engineering Co., 66 Beaver Street, New York, beg to announce the sale of thirteen dryers during the month of March, covering the fertilizer, phosphate, humus and sand-lime brick industries, and have a promising outlook for April.

The Century Cement Machine Co., of Rochester, N. Y., report sales of the Hercules concrete machine to the city of New York, and two sales to contractors in India and China. A. T. Bradley, of the company, is strongly advocating a coarse wet mixture for backing, and finds that his judgment is backed by the experience of contractors who do large work.

The Contractors Supply and Equipment Co., Chicago, Ill., who are well known to the trade as the builders of the Smith concrete mixer, which has so long held a leading position announce that the coming season from their standpoint indicates a greater activity in concrete construction than any in the past. Recently they have established an office for the sale of the Smith mixer as well as their full line of concrete machinery supplies and equipment at Detroit, Mich. This new branch office is located at 1208 Majestic building with William Ord in charge.

The Cement Machinery Co., Jackson, Mich., are introducing a brick machine to make Cuban-sized brick, and report that there is every indication of continued activity in the line of concrete.

The C. O. Bartlett & Snow Co., Cleveland, O., have just issued a comprehensive catalogue dealing with rotary dryers, which they have installed with great success for the preparation of a large variety of material. No one who is confronted with the drying problem can afford to be without this handbook of useful information. Write for it today.

The Reading Brick Machinery Co., Reading, Pa., issue a catalogue in which they show the various sizes of the Sanders cement brick machine with which they have recorded no little success. The catalogue announces a new rotary, continuous mixer having capacity of seventy-five cubic yards a day, which is also an invention of Mr. Sanders. This company has developed a great deal of practical brick-making and brick-laying information as well which they are furnishing to their patrons. They have taken up the subject of ornamentation and decorative construction in connection with their cement products, which will undoubtedly prove of great assistance to many brick manufacturers who are also operating a contracting department.

A. P. Dyke, Hope, Ark., desires to correspond with parties who are looking for locations for factories to manufacture clay products of all kinds, or cement building material where sand, gravel and such indispensable factors can be had at the minimum cost.

The Chicago Concrete Machinery Co. have secured more commodious quarters for their warerooms at No. 20 South Canal St., where W. J. Roseberry, the secretary and treasurer of the company, will be glad to receive visiting customers. The Chicago concrete mixer, one of the latest perfected machines catering to the contracting trade, is their leader, although they will handle a full line of contractors' equipment and supplies. Mr. Roseberry shows the economies and advantages of the Chicago mixer and explains the details of its construction to all who are interested.

We have been favored with a catalogue of the Geo. B. Cresson Co., Philadelphia, Pa. It has been carefully compiled and arranged by H. Taylor, and is solidly bound in buckram, printed upon heavy plate paper and handsomely illustrated in colors. It is a complete digest upon the subject of power and translating machinery as well as crushing and concentrating machinery, all of which is of special interest to our readers. Dimensions and capacities are carefully computed and tabulated so that working with this catalogue the operator can select his equipment with the minimum of cost of effort to himself. This catalogue is a credit to the house of Cresson and has already gained the appreciation of those who operate crushing and concentrating propositions. A copy will be sent to interested parties upon application.

Wanted and For Sale

One insertion, 25c a line; Two insertions, 50c a line; Three consecutive insertions with no change in the composition, 50c a line. Count eight words to line; and two lines for a head.

WANTED—HELP.

ASSISTANT SUPERINTENDENT for plaster mill in the East; competent man, able to handle men in mine and mill, and experienced in the calcining and mixing of stucco, etc.; must send first-class references with application. Address F 2, care Rock Products.

COMPETENT AND PRACTICAL foreman to take charge of artificial stone plant doing high class work. P. O. Box 223, Albany, N. Y.

EXPERIENCED and capable man to take the management of a stone quarrying sawing and crushing plant. An exceptionally fine grade of white limestone for building purposes. Straight salary or salary and percentage of profits to right man. Address C 5, care Rock Products.

EXPERIENCED LIME SALESMAN, with references for Virginia, West Virginia, Maryland and Pennsylvania. Apply F 1, care Rock Products.

FIFTY QUARRYMEN—Wages $1.54 per day with board and lodging. Excellent locality. JAMESON LIME CO., Tehachapi, Cal

MANAGER to take charge of sand-lime brick plant. Opportunity given for an interest in the business. With answer give experience and references. Address F 3, care Rock Products.

WANTED—POSITION.

BY PRACTICAL CEMENT, lime or crushed stone man. Can design, build and equip plants, handle labor, open quarries, do test work and all office work. Can handle boilers, engines, pumps, crushing and grinding machinery, etc. Address F4, care Rock Products.

WANTED—MACHINERY.

TO BUY A SECOND-HAND Crusher, screen and elavator in good repair. Write for particulars. IDEAL BUILDING STONE CO., Bristol, Va.

FOR SALE—PLANTS.

ALABAMA LIMEWORKS, operated daily, including 500 acres limestone and timber lands. LOUISIANA BUSINESS CO., New Orleans, La.

OR LEASE, the North Adams Lime Works, capacity 100 bbls. per day with plenty of stone for larger capacity. The lime is a high grade finishing lime, situated near Boston & Maine and Boston & Albany railroads. Good trade established and kilns are run all the year. For further information address HARRY M. FARNAM, North Adams, Mass.

YOU CAN SECURE an established business, live town, cheap sand and gravel, brick $12.00 1,000. E. C. KEMPER, Dallas, Texas.

FOR SALE—MACHINERY.

CHAMPION No. 5 rock crusher, used five months, good as new, too small for our use. Can make immediate shipment. POTOMAC LIME AND STONE CO., Frederick, Md.

GATES No. 4 Gyratory Rock Crusher in good order; also engines and boilers. Address R. P., Box 2, Station A, Cincinnati, Ohio.

INGERSOLL TRACK CHANNELER in first class condition, with or without boiler. Bargain. FORT MADISON & APPANOOSE STONE CO., Fort Madison, Ia.

ROTARY DRYER for sale cheap. Dimensions 25 x 5 ft., built of ¼ in. plates, double riveted, longitudinally; large capacity for drying sand, clay, marl, phos-rock, gypsum, etc.; is complete and in good working order. Bargain to prompt buyer. GENERAL EQUIPMENT CO., Syracuse, N. Y.

FOR SALE—MACHINERY.

ONE NO. 2 EMERSON steam pump, first class condition. Used only one month. No further use; listed 415 gallons.

SULLIVAN "Z" Channeling Machine—In good running order, complete with 10 gangs of tools, up to 10 ft.; 30 ft. of section track wrenches, etc., without boiler. Located at and apply to HOLMESBURG GRANITE CO., Philadelphia, Pa.

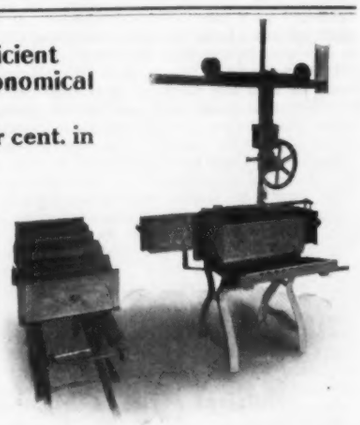
FOR SALE—MATERIAL.

ONE HUNDRED ACRES of land, capable of producing millions of barrels of high grade Portland cement and lime, situated on main line of Southern Railroad about fifty miles from St. Paul and Minneapolis, and one hundred miles from head of the Lake cities, Duluth, Superior and Ashland. Also by water to all points on the Mississippi to the Gulf. Address S. J. WALL, St. Croix Falls, Wisconsin.

Simplicity / Practicability in **THE X-L CONCRETE STONE MACHINE** is **Efficient / Economical**

A Tested Success from Results of Years of Experience.

Guaranteed to Equal in Efficiency any Four Other Machines and Save 20 to 25 per cent. in the Construction of "Dry Walls."



A New Feature—Interchangeable Plates. The same plates can be used on all sides, finishing both the face and outside and inside returns, and can be inverted and intermingled, forming hundreds of different designs and combinations. Our blocks make all width walls, and form all parts of a building, the same as a brick.

Bear in Mind you don't require five or six different size machines to do the work when using our X-L Machine. It makes blocks in 17 different lengths, 3-4½-6 and 9 inch heights; angles and circles, for both full walls and veneering, giving a variety of over 1000 blocks; all made on the one size pallets.

Dry Wall Guaranteed without facing the blocks, or using face solutions, which are not only troublesome and expensive, but destroys the beauty and natural stone appearance. 10 to 25 per cent saved in material without sacrificing strength. Our Off-Bearing Car and Automatic Loading and Unloading Truck has changed the back-breaking work under the old methods to almost child's play, saving 75 per cent in the cost of handling blocks. **We Back Every Statement We Make.**

See Catalog For Prices.

E. E. EVANS, Mgr. 111-113 W. 18th Street, **Kansas City, Mo.**

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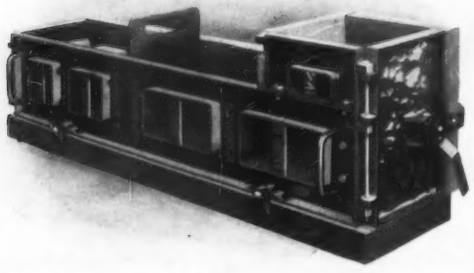

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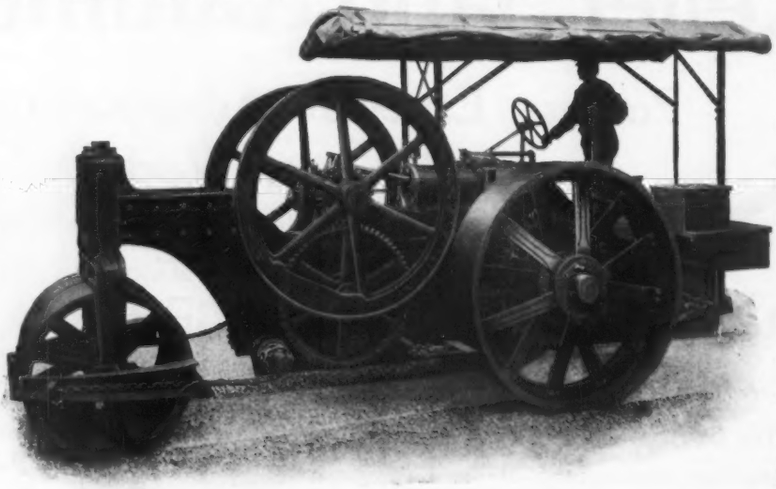

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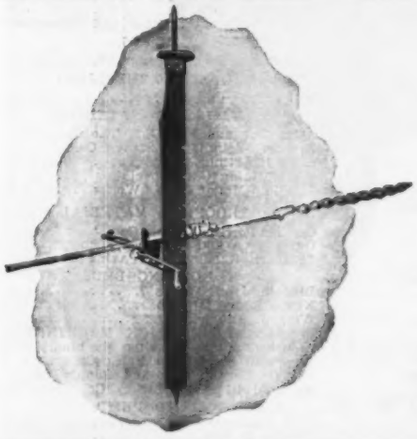

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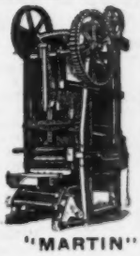

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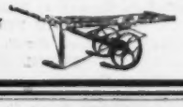

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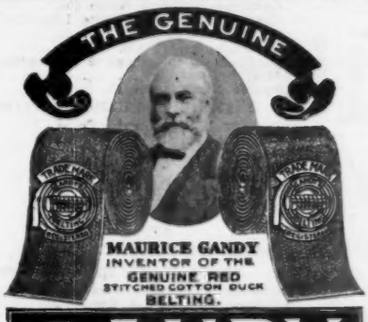

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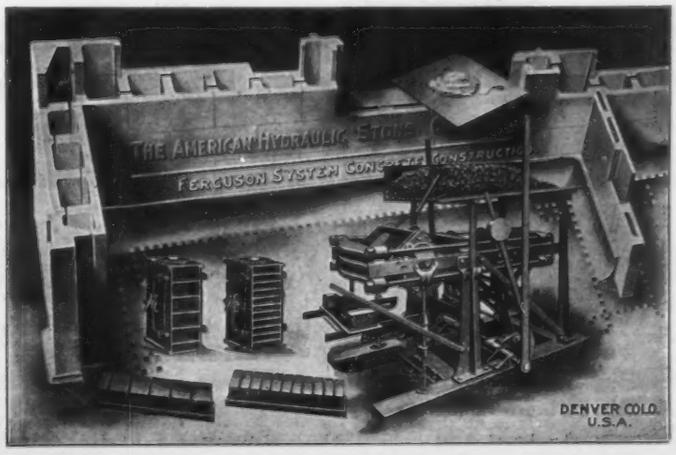

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Scioto Lime Co.
Woodville White Lime Co., The

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Chas Warner & Co.
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LIMESTONE.
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Kennesaw Marble Co.
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Bedford Steam Stone Co.
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Consolidated Stone Co.
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Empire Stone Co.
Furst, Kerber Stone Co.
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McMillan, W. & Son
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Johnston, August
New Albany Mfg. Co.
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What is Mixing?

Mixing is tearing two particles of the same material apart, and placing a particle of a different material between them.

Blades in a mixing drum act as disintegrators. They help tear the particles apart, thereby permitting other particles to fall between them, and thus producing a thorough and uniform mixture.

Disintegration must always precede mixing. It assists mixing.

This is the Way the

Smith Mixer Mixes

Kneading is Not Mixing. Some mixers subject the aggregates to a kneading process, and then claim that they mix.

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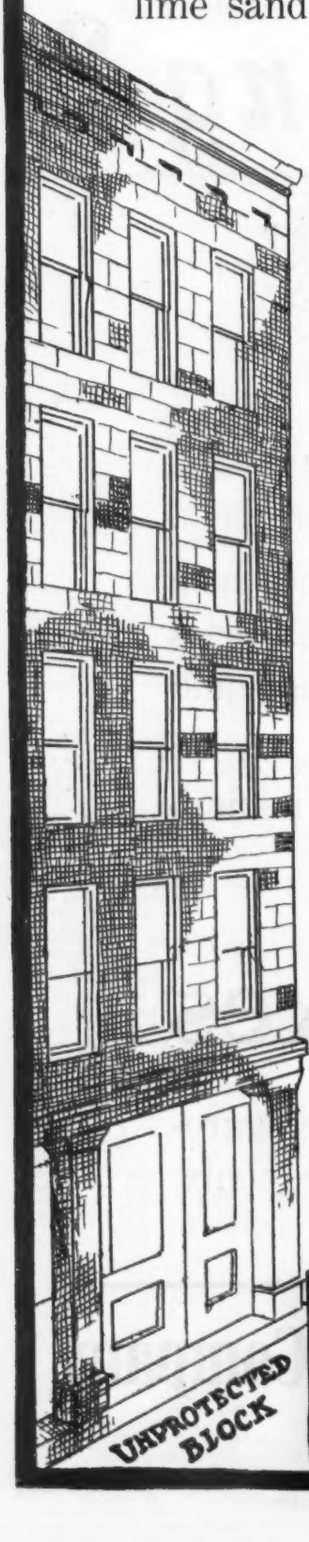
Contractors Supply and Equipment Company

Main Office, 520 Old Colony Building, CHICAGO, ILL.

NODAM-PWALL

The Cheapest and Best Waterproofing

Nodam-Pwall—A Fluid Compound has been invented, perfected, tried and found not wanting. When employed to subdue the affinity of seasoned cement brick or block and lime sand brick, to not absorb, but shed RAIN WATER.



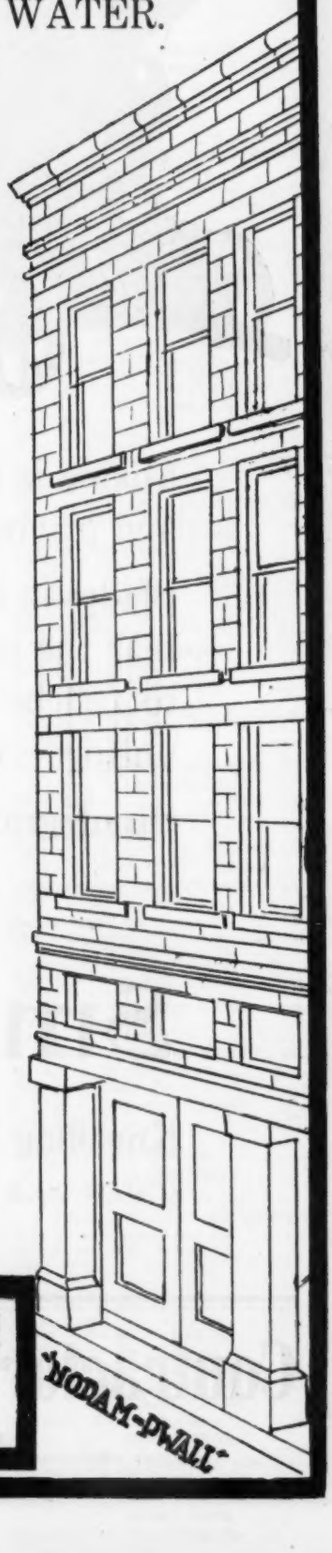
Why Not Make a Profit

By Producing a Perfectly Satisfactory Waterproofing Compound for your own Work

This formula now offered for sale for the first time is worth the investigation of all those who want to manufacture the best product at the lowest cost.

EVERY cement user, cement block and brick manufacturer and user, sand lime and brick manufacturer and user, and contractor will profit by purchasing this formula. **The Price is $5.00,** which must be paid in advance and the signature of the recipient which guarantees the lawful owner of this NODAM-PWALL formula must sign a contract not to reveal the materials used or the mix which composes the formula, or the instructions as to its particular use.

NODAM-PWALL is a winner. It will make you money. The investment is small and by integrity of purpose and the purchase and use of the same you can add to your success for 1907 by ENDING YOUR ORDER AT ONCE, and don't forget the name NODAM-PWALL.



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233 FIFTH,
LOUISVILLE, KY.

Peerless Brick Machine, 1907 Model.
Pat'd No. 811818.

The people who use the "Peerless" know its profit making qualities.

We will send you a list of the concerns who have already made money by doing business with us, if you wish.

Make Money

As others have already done it, by making Cement Brick upon a Peerless Brick Machine.

The Price is Right. *The* Brick are Right.

More Peerless Machines now in use producing a profit to the owners than all others combined.

WRITE FOR ILLUSTRATED CATALOGUE.

Peerless Brick Machine Co.,

100 Lumber Exchange, MINNEAPOLIS, MINN.

The Sanders Brick Machine

For making sand and cement brick, sand and lime brick, any brick, all shapes and sizes. This machine makes the finest face brick of any machine on the market; every brick is perfect with fine, smooth face and sharp, square edges, every brick a pressed brick. This machine makes plain brick, ornamental brick, molded brick, all shapes and sizes, building blocks, rock face, tool face, panel face, plain face with V joint and brick face, fancy belt courses, corner blocks, combination brick cornice, fine porch columns, porch piers, lattice work, wall trimmings, chimney tops, paving block, archways, wainscoting and tiling for vestibules and hallways, stair steps and risers figured and paneled, for inside and outside stairs, also many figures in terra cotta work can be made on this machine, and made any color by using the chemical coloring.

Two men can make 4,000 to 6,000 brick a day, 1½ bbls. of cement to 1¼ yds. of sand will make 1,000 good brick; 2 bbls. of cement to 1½ yds. of good, fine sand will make 1,000 fine face brick, style and variety of work unlimited. It pays every time to buy the best machine. With good sand and good cement you only need one of our machines to make the best and finest cement work that can be made. Send for our catalogue in which you will see cuts made from work on this machine—seeing is believing—it is acknowledged by experts to be the best machine on the market for cement work. Be sure that you are right, then buy our machine which makes everything right.

Catalogue Free.

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A LINE OR TWO IN THE WANTED AND FOR SALE DEPARTMENT WILL DO THE TRICK.

The Only Fire-Proof Sand for Cement Brick and Blocks

THE IDEAL SAND FOR SAND-LIME BRICK

THE BEST SAND
GLASS MANUFACTURING FOUNDRY PURPOSES
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PURE WHITE AND BUFF
99% Pure Silica

THE BEST OF KNOWN CORE SANDS.

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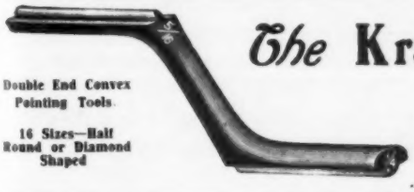


Double End Convex Pointing Tools.

16 Sizes—Half Round or Diamond Shaped

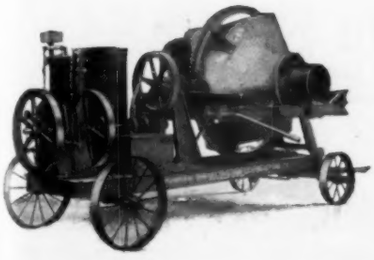
The Kramer Bros. Foundry Co.

DAYTON, OHIO

Largest Manufacturers of Cement Tools in the United States.

SEND FOR CATALOGUE "G"

Double End Concave Beading Tools
16 Sizes—Half Round or V Shape



The Chicago Improved Cube Concrete Mixer

Used by United States Government Reinforced Concrete Commission, St. Louis, for all cement testing purposes

Only Machine Provided with AUTOMATIC POWER Dumping Device which SAVES LABOR of one Man.

OUR NEW MIXER CHARGING ELEVATOR

not only INCREASES THE CAPACITY of the mixer from 25 to 50 per cent., but ABSOLUTELY ELIMINATES all necessity for the building of any kind of platform or runway, THEREBY SAVING 75 per cent. of time lost in moving from one point to another on the work. Sizes and mountings for every requirement. Write for catalogue No. 16.

Municipal Engineering & Contracting Company.

New York Office: 150 Nassau St. 607-611 Railway Exchange, CHICAGO, ILL.

Tell 'em you saw it in ROCK PRODUCTS.

SAVE 75 PER CENT. OF THE COST

BY USING A PAULY CONCRETE WALL MACHINE.

Enormous Economy Guaranteed on Every Job When Used for the Construction of

Foundations, Basements, Cellars and Retaining Walls

The expense of cribbing or centering amounts to a distinct operation that must be performed by skilled mechanics using costly lumber, with heavy waste in both time and materials. After all this comes the actual concrete work, representing really a small part of the outlay and cost. Yet this is the basis for collecting and your customer's only reason for doing business with you.

We build the only machine that completely dispenses with all of the cribbing or centering in very many concrete jobs. Fully half the work of any contractor, who takes a general line of the ordinary run of concrete work, can be reduced in cost to him at least 75 per cent. by using the Pauly Wall Machine. This means a larger profit and a lower price to your customer at the same time.

The cost of the lumber for centering, the expense of handling the lumber, the delay and cost of carpenter work can be eliminated.

Substantial Contractors are Invited to Investigate. DO IT NOW!

ADDRESS MACHINERY DEPARTMENT

Concrete Stone & Sand Co.

YOUNGSTOWN, OHIO.

Newsom Crushed Stone and Quarry Company,

MANUFACTURERS OF

Crushed Stone for Ballast, Concrete Work and Roadways, also Concrete Hollow Building Blocks.

Sales Agents for Cement Block and Brick Machinery, Mixers, Portland Cement, Etc.

NASHVILLE, TENNESSEE.

We have built in Nashville SIXTY HOUSES out of CEMENT BLOCK with ONE MAKE OF MACHINE, having used it in preference to ALL OTHERS,—knowing from ACTUAL WORK and EXPERIENCE that it is best suited to the work and MAKES EVERY SIZE, SHAPE and STYLE of blocks used in a building.

Write for Particulars of Our Various Lines.

THE PERFECTION POWER BLOCK MACHINE For Making Hollow Concrete Blocks.

The Only Machine Making Hollow Blocks Under High Pressure.

100 TON PRESSURE ON EVERY BLOCK.

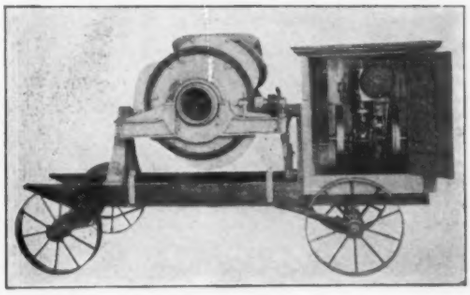
600 TO 1000 BLOCKS PER DAY.

OUR MACHINE MADE THE SAND-LIME BLOCK ON EXHIBITION AT THE SAND-LIME BRICK CONVENTION, DETROIT. WRITE US FOR FULL PARTICULARS.

THE PERFECTION BLOCK MACHINE CO., Kasota Building, Minneapolis, Minn.

Tell 'em you saw it in ROCK PRODUCTS.

The "Clover Leaf"



Mixes Uniform Concrete

No matter whether the cement is to be mixed with fine or coarse material or both.

You need not take our word for it, but you must believe what contractors who use our machines say. They get good results and say so. It's results that count.

If you mix concrete the experience of other men in your line is worth money to you. Our catalog reprints a few experiences; we will send it whenever you say so.

ADDRESS

The "Clover Leaf" Company,

SOUTH BEND, INDIANA

THE FLOUR CITY

"Continuous Air Space" Block Machine

HAS NO COMPETITORS, BECAUSE IT MAKES:

An Absolutely Moisture and Fire-Proof Block.
A Wall with Continuous Vertical and Horizontal Air Chamber.
A Block with Rock Face, Panel Face, Brick Face and Broken Ashler Face
Any Degree Angle Blocks, Arches, Water Tables and Fancy Cornice.
The Only Block Having Two Nailing Points Moulded in Every Stone

Will turn out 150 to 200 Blocks, in ten hours with two common men.

Write us to-day for Catalog, Special Proposition, Exclusive Rights, Territory, etc., etc.

AGENTS WANTED.

THE FLOUR CITY CEMENT BLOCK & MACHINE CO.

701 Sykes Block, MINNEAPOLIS, MINN.

IT IS A QUESTION OF ECONOMY

in buying a **Concrete Building Block Machine** the same as any thing else. You want the **best**, at the same time the **cheapest**. The **SIMPLICITY** fills both of these requirements.

Write for catalogue and further information.

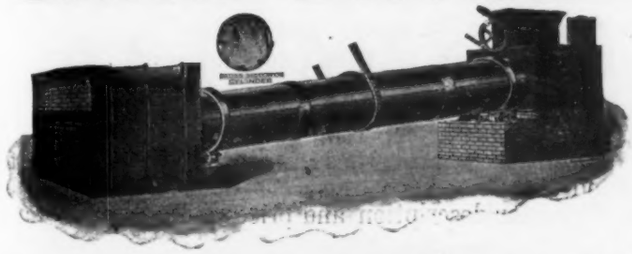
"THE SIMPLICITY."

The Standard Sand & Machine Company,

Manufacturers of Labor Saving Machinery

Address Dept. "D." CLEVELAND, OHIO.

SAND DRYER



Dryers, Screens, Elevating and Conveying Machinery, Mixers, Concrete Building Block Machinery of all kinds, Power Tampers, Etc.

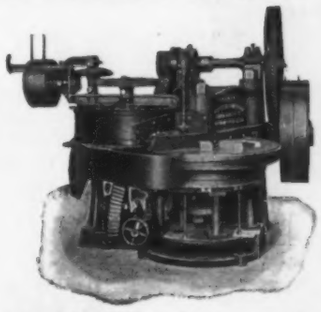
Ask for catalogue and prices.

The Standard Sand and Machine Company,

CLEVELAND, OHIO.

The American Sandstone Brick Machinery Company,

Dept. R. SAGINAW, MICH.



Improved Kemnick Rotary Presses are now being built right or left hand, with extra table for making face and fancy brick, on which double pressure is exerted. Our patented rotary brush does the work of one man, and keeps the plunger plates clean.

DON'T confuse our practical system with the so-called Scientific Systems. We have the **Practical System**, the **Practical Machinery**, the **Practical Press**, the **Practical Hydration** and the **Practical Outfit**, which is manufactured in our own shops, under the supervision of **Practical Men** with **Practical Experience.**

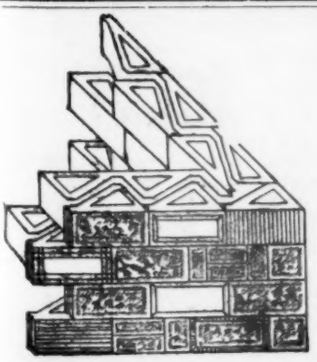
Our Plants are installed under the supervision of practical engineers who know how Sand-Lime Brick should be made, and can be made.

We have practical plants running successfully, to show to prospective investors.

We are Not Scientists.

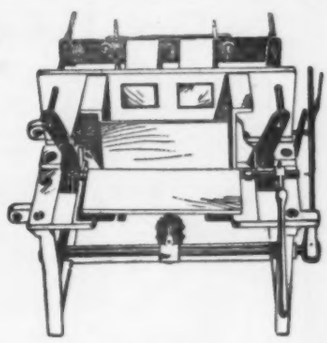
We produce results, because **we are the oldest practical Sand-Lime engineering company doing business in the United States**, and **we defy contradiction.** Incorporated April 1902.

The "Reed" Machines are in the Lead.



Reliable Agents Wanted. One Agent Earned $365.00 in Thirty Days.

The adjustability of our 1907 machines is a marvel putting them far in the lead of others. Most simple, rapid, up-to-date Machines on the market. Face-down or Face-side Machines producing single, double, hollow or right-angle tri-angle blocks. Best brick machines out. Our system of two-piece wall excels all others on account of the natural bondage and triple air space. When in the market for concrete block or Brick Machine as well as concrete mixer, get our catalogue and prices. Do you desire to make $$$$$$$$? We can start you right.



The Wichita Coal and Material Co., Wichita, Kan., U. S. A.

Tell 'em you saw it in ROCK PRODUCTS.

All agreements contingent upon strikes, accidents or other causes beyond our control.
All agreements, contracts and sales must be approved by J.W. SANDERSON, General Manager.

THE UNITED CEMENT MACHINERY MFG. CO. 1906 INC

GENERAL OFFICES & SHOPS - COLUMBUS, OHIO. U.S.A.

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CEMENT MACHINERY MFG. CO. — BURLINGTON, IA.
AND VARIOUS OTHERS

MANUFACTURERS OF
SIDE FACE BLOCK MACHINES,
FACE DOWN BLOCK MACHINES,
CONCRETE MIXERS,
SIDE WALK BLOCK MACHINES,
CEMENT BRICK MACHINES,
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SPECIAL MOULDS,
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CAST PALLETS ANY SIZE,
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In our Warerooms of 33,000 Square Feet Area, we carry 40 different kinds of machines used in the Concrete Block Industry and Associated Work.

We have Hollow Block Machines from $21.00 up, the prices varying according to the outfit and grade. They include the most perfect machines ever produced. Our several types of Concrete Mixers are the best that money will buy.

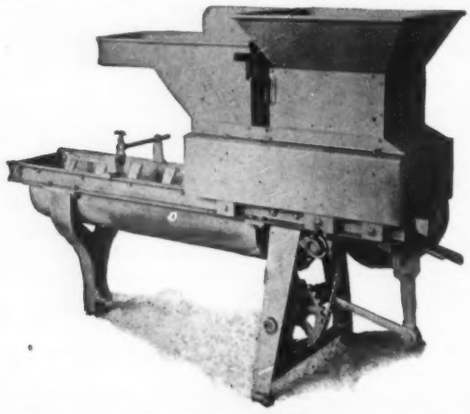
OUR OFFER:—In order that you may carefully examine our complete lines and choose just what you want, **we will gladly pay your railroad expenses** and practically operate any or all of the machines in our demonstrating department, then if we cannot satisfy you fully as to their merit and price **we will pay your fares just the same.**

Or, if you purchase a machine direct we will send a practical demonstrator to start your plant.

Write us to-day for our 80-Page Catalog. Department C.

The United Cement Machinery Manufacturing Co.

Maple and Front Streets — COLUMBUS, OHIO



The Standard Continuous Concrete Mixer

"The Mixer that Measures and Mixes."
"You fill the Hoppers, the Mixer does the rest"

CONTINUOUS, AUTOMATIC, FEED EXACT PROPORTIONS.

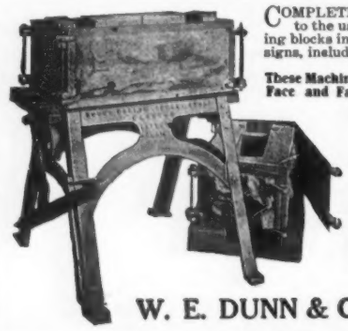
Materials first Dry Mixed, then "Tempered." Output instantly variable from O to Maximum at will of operator, thus insuring Fresh Material for each Block. Feeds Sand and Gravel Dry or net.

Write for description and prices to

The Standard Machine Co.,

KENT, OHIO

The Dunn Hollow Block Machine



COMPLETE in every detail. Especially adapted to the use of the Block manufacturer. Making blocks in all widths, lengths and many designs, including Sills, Lintels, Pier Blocks, etc.

These Machines Combine the Side Face and Face Down Systems. **Price $100**

MASONS AND BUILDERS BLOCK MACHINE

MAKES blocks from 2 to 12 inches in width, up to 20 inches long in different designs. No expensive iron palleta required. A practical, rapid and economical machine for the Mason and Builder. No machine at any price makes better blocks or makes them more rapidly or economically. PRICE..... $40

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W. E. DUNN & CO., Sole Manufacturers in the U. S. 350 W. Fullerton Ave. Chicago, Ill.

Undeveloped Stone Deposits.

Some very fine undeveloped stone deposits—limestone, granite and sandstone, are to found found thoughout the West and Southwest tributary to the lines of the

Rock Island — FRISCO

Any one seeking a location for a quarry or stone crusher could be accomodated to excellent advantage. Good openings also exist for Lime Kilns and Portland Cement Plants.

Send for a copy of book "OPPORTUNITIES" just published describing all points reached by the Rock Island-Frisco Lines.

M. SCHULTER, Industrial Commissioner,

Rock Island-Frisco Lines, 1144 Frisco Building, ST. LOUIS, MO.

RIGHTLY NAMED

—IS THE—

DEMOREST

Little Giant Mixer

That was the unanimous expression of unbiased opinion at the Chicago Convention—WHY? Let the following speak for itself and remember that the Batch Mixer referred to is one of the best known:

GRAND RAPIDS REFRIGERATOR COMPANY.

Ballou Manufacturing Co., Belding, Mich. Grand Rapids, Mich., December 19, 1906.

Gentlemen:—We have been using one of your power mixers for the past month and will say that we are greatly pleased with its operation. We are using at the same time an $800.00 machine with steam power. The latter is a batch mixer, and we notice every time the men get a little lazy, they don't put in as much gravel as they ought to, which increases the necessary portions of cement. We also notice that in the operation of the batch mixer, four or five laborers are frequently waiting for the batch to be mixed, thus much time is lost; while with your mixer we can load up the wheelbarrows as they come around.

We are also much pleased with the thoroughness with which the cement is mixed with the gravel. It is a perfect mixture and the proportion of cement and gravel can be regulated to a nicety. If purchasers only realized that your machine is more exact in proportion of gravel and cement than batch mixers as they are usually worked, we do not see why you should not sell all the machines that are needed. We also find a great economy in the fuel expense, the coal for the batch mixer costing $1.00 a day, and the gasoline only fifty cents a day. Another economy is in the cost of the engineer. The batch mixer calls for a man at $2.50 a day to shovel coal and attend the engine. Your mixer requires no such expense. It also takes fewer men to shovel the gravel into the machine because they can work steadily, while with the batch mixer they have to wait until the batch is mixed and emptied every time. We figure the saving in labor and fuel at $15 per day over the batch mixer, and they are running side by side, and your machine will make more concrete than the batch mixer.

C. H. L.
H. D.

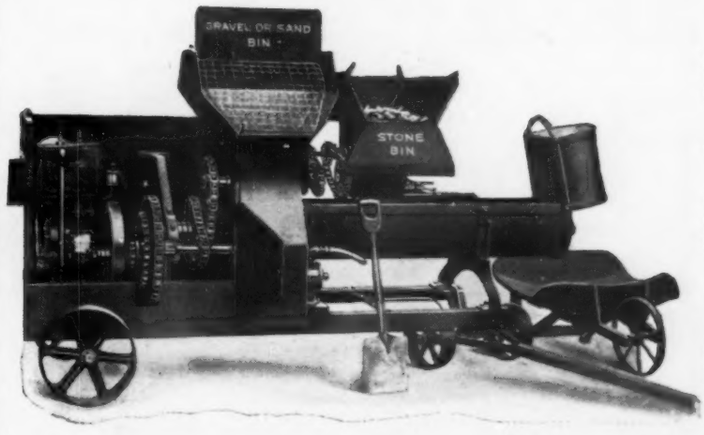
Very truly yours,
GRAND RAPIDS REFRIGERATOR CO.
(By C. H. Leonard.)

Do You want to save that **$15 a day?**

If so, write for booklet to

BALLOU MFG. CO. 35 High Street, **Belding, Mich.**

ALL MIXES GOOD MIXES



The ordinary mixer cannot be depended upon to produce uniform mixtures. It varies from batch to batch. Sometimes too little concrete is used, but more often too much. Insufficient cement means unsafe work. Too much cement—unnecessary expense.

The **"Eureka"** overcomes these troubles—eliminates them entirely.

Simply set the feeders to the proportion you want, shovel the material into the hopper, and you have a stream of accurately proportioned and perfectly mixed concrete flowing from the mixing barrel continuously.

No stops, no waiting between batches; everybody busy all the time. Less help, less expense.

Every particle of mixed concrete uniform. Capacity dependent upon ability to get material to and from machine. Every **"Eureka"** Mixer sold under a positive guarantee.

Ask for Catalogue No. 3.

EUREKA MACHINE CO.

JACKSON, MICH.

The Latest Improvement in Building Material.
A Product in Itself, No Imitation.

"ART MARBLE," "LITHOLITE"

—and—

Concrete Building Blocks.

THE THOMAS
Block and System of Insulated Walls

—combining—

Strength, Durability and Beauty.

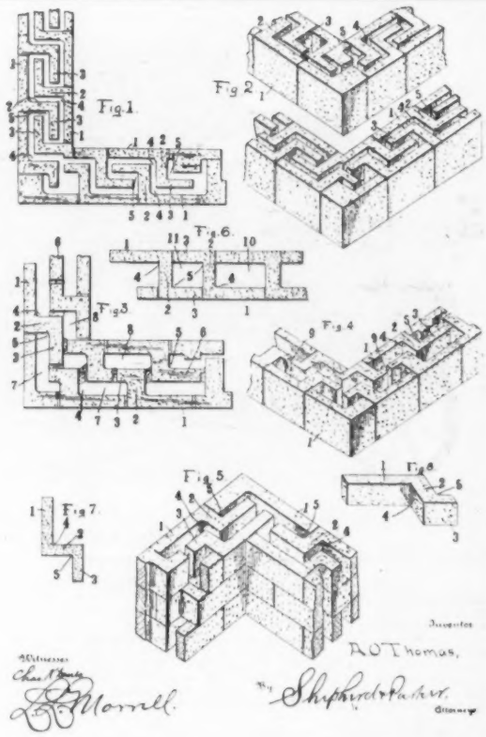
As far superior to common imitation stone as pressed brick is to common, and much cheaper. Our process is based upon scientific principles. Machinery and cost of manufacturing reduced to the minimum.

BLOCKS NON-ABSORPTIVE
WALLS FROST PROOF

AGENTS WANTED

Buy while Introductory Prices are Offered.

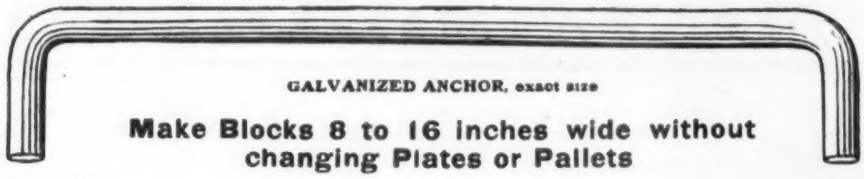
Patents fully Cover System.



KNUTZEN & ISDELL, General Agents, Kearney, Neb.

THE ANCHOR CONCRETE STONE MACHINES make the only continuous Air Space Block—Make the only Frost and Moisture Proof Block—Make all Blocks on the same Wooden Pallet.

Fully Protected by Patents

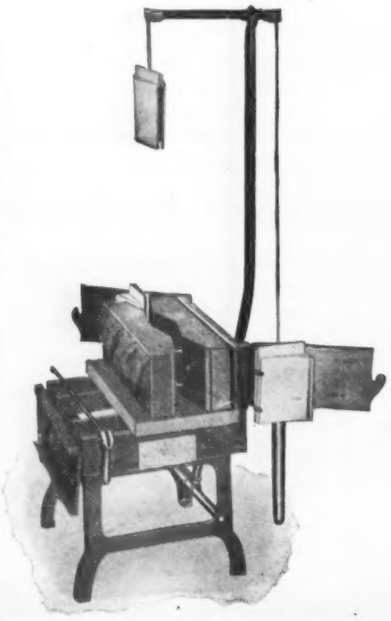


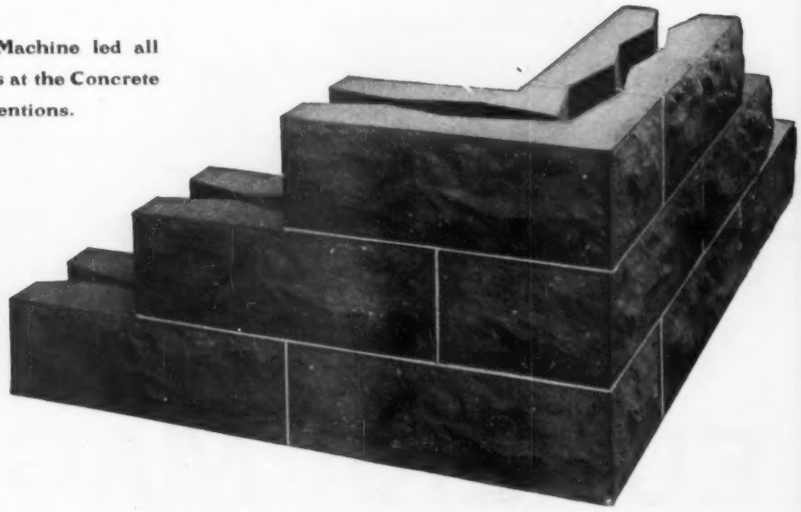
GALVANIZED ANCHOR, exact size

Fully Protected by Patents

Make Blocks 8 to 16 inches wide without changing Plates or Pallets

Our Machine led all others at the Concrete Conventions.





Write for Catalogue "B" and Prices

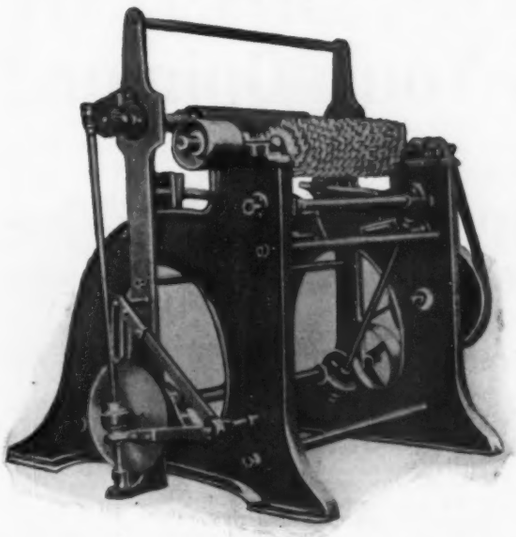
ANCHOR CONCRETE STONE CO.

Eastern Agency, 1 Madison Ave., New York City, Albert Oliver, Mgr.

Rock Rapids, Iowa.

"The Cochran" Automatic Wood Fibre Machine

(PATENTS PENDING)



There is positively nothing **cheap** or **shoddy** about this machine, either in **workmanship** or material.

There are no **Sprocket Wheels** or **Chains,** no **Cone Pulleys** or **Cog Wheels** to break, get out of order and cause trouble. All the power is transmitted with **bevel gears** adjusted to "**run like a watch.**"

We call special attention to the "**speed increasing mechanism**" and **automatic** action of our machine. When the log is reduced to the size of 2 inches the carriage is automatically released, and **swings back to place without being touched by the operator,** while at the same time the log **stops revolving,** without interfering with the other parts of the machine.

The log when finished is revolving **six times as fast as at the start** and all done **automatically** and **continuously.**

Write for catalogue and prices to

Concrete Engineering and Equipment Co.

Butler, Pa. **Greensboro, N. C.**

PATENTS

C. L. PARKER,

Attorney-at-Law and Solicitor of Patents

146 Deitz Bldg., Washington, D. C.

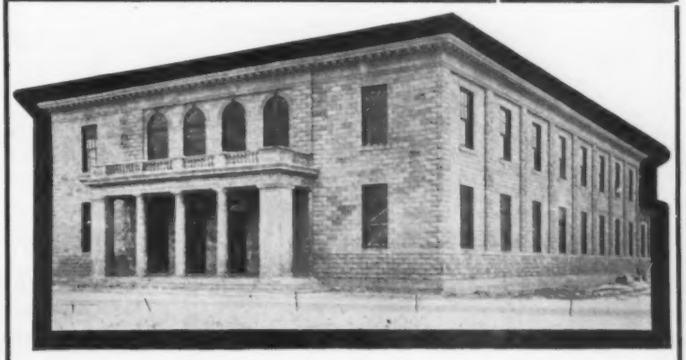
Patents secured promptly. Trade Marks registered. Reports rendered as to patentability, validity and infringement. Hand Book for inventors sent free upon request.

CUMMER
CONTINUOUS PROCESS
FOR
Calcining Gypsum

No Kettles Used. Plants in Operation.

Great Saving in Cost of Manufacture and Quality of Product Guaranteed.

The F. D. CUMMER & SON CO., Cleveland, Ohio.



RESTAURANT BUILDING OF THE GENERAL ELECTRIC CO., SCHENECTADY, N. Y.

Hercules Concrete Block Machine

If you are interested in Real Concrete Block Machines write for our Catalog today.

You won't know what a real Concrete Block Machine is until you have read the Hercules 1907 Catalog.

To attempt to describe the marvelous performance of the simply built Hercules in this space would be ridiculous.

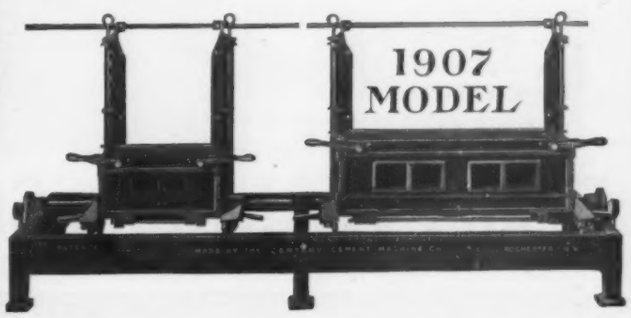
It is the strongest, simplest, fastest machine in the world—it makes sills, water tables, lintels, cornices, steps, etc.

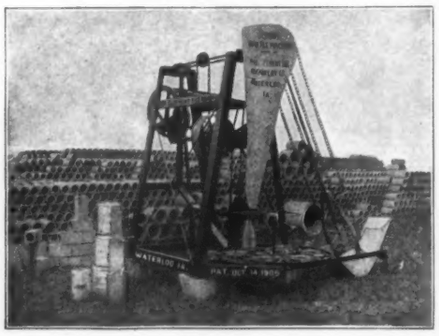
No bolts, pins, chains, or springs in the Hercules, it makes two blocks at one time, thus doubling capacity; it makes blocks ranging in size from two inches to six feet in length. The Hercules is the standard of excellence in every civilized country; it was chosen for Government work in Porto Rico, and by the British Government for massive buildings in Egypt.

Send for Catalog L.

Century Cement Machine Co.

179 WEST MAIN STREET **ROCHESTER, N. Y.**





What is Your Opinion?

ON THE

Schenk Drain Tile Machine

A Description of our Exhibit at St. Paul, as Given in the January Issue of "Rock Products."

The Cement Tile Machinery Co., of Waterloo, Iowa, had one of the most interesting displays on the floor. There are many money making possibilities in the cement working industry, but none presents a greater field of endeavor for progressive men than the manufacture of cement tile. Cement drain tile have proven superior to any others. They are porous, strong and durable, and absorb the moisture better than any other material. It is claimed that 3,000 tile can be made in a ten hour-day on one of these machines. The machine works with clock-like precision and held the interest of the visitors. They can make drain tile on this machine in seven sizes, 4, 5, 6, 7, 8, 10 and 12 inches in diameter—12¼ inches in length, making just sixteen to the rod. One of the features of the machine is that one size can be produced just as fast as another. The machine also has molds for making small hollow building blocks. The display was not only one of the most interesting, but one of the most unique in the hall. Mr. Schenk, the inventor of the machine, and W. H. Stewart were on hand in behalf of the Cement Tile Machinery Co.

Grasp the Opportunity and Write

The Cement Tile Machinery Co.

Waterloo, Iowa, U S. A.

Fisher Hydraulic Stone Machinery

Is the only Machinery Perfected for making True Concrete Stone.

HYRAULIC POWER SYSTEM.

A 200 Ton pounding, tamping pressure, uniformly applied.

Condenses the concrete 30%.

Same density from center to surface.

Allows the use of **sufficient water** to make a **plastic mix.**

Cement thoroughly crystallized.

These conditions produce **true stone** of great **density** and **strength.**

Stone of **all sizes** and **shapes** within dimensions 68x18x9 inches.

ASK FOR CATALOGUE "R"

Turns out from 1500 to 3000 cubic feet of stone per day.

Solves the **problem** of producing a **high grade, reliable building material** at moderate cost.

The demand is constantly **increasing**

Lumber will soon be **exhausted.**

Cut stone is generally too **expensive.**

True Concrete Stone will soon be used as extensively for **building** as it is now used for **paving.**

By-products of **quarries**, mines, furnaces, etc., utilized.

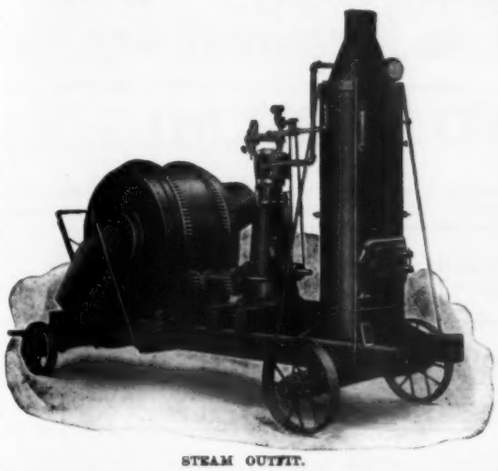
INVESTIGATE NOW.
ASK FOR CATALOGUE "R"

Complete operating exhibit at Convention of National Association of Cement Users, Chicago, January 7 to 12, 1907.

Fisher Hydraulic Stone & Machinery Co.

Builders' Exchange Building, :: BALTIMORE, MARYLAND

THE CHICAGO CONCRETE MIXER



STEAM OUTFIT.

EFFICIENT—SIMPLE—DURABLE

Why dump the Mixed Concrete on the ground and then shovel into wheelbarrows **when you can dump direct into barrows with the Chicago Mixer?**

It is the only Batch Mixer that can dump into wheelbarrows successfully, saving time and expense. Your wheelmen take their load themselves. It does not require an extra man to dump the Mixer.

The material is thrown back and forth and rolled over and over 100 times per minute.

The **Chicago Concrete Mixer** is lower on the charging side than other Mixers. It is also lighter.

The Mixer does not have to be stopped for either loading or discharging.

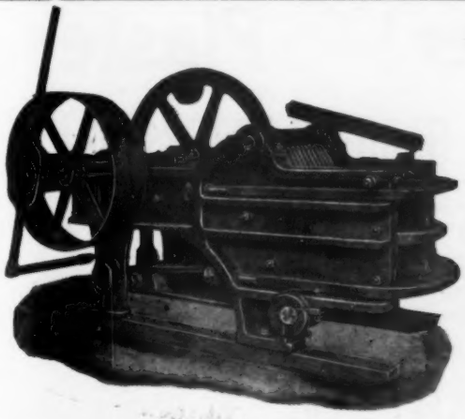
We equip our Mixers with **Steam or Gasoline Engine and Motor Power—on Trucks or Skids.**

Send for our catalogue which explains **why it is the best all round Mixer on the market.**

Chicago Concrete Machinery Co., 22-24 W. Randolph St., Chicago, Ill.

REPRESENTATIVES OF THE CHICAGO CONCRETE MIXER.

Beall & Co., 321 Hawthorne Ave., Portland, Ore., Northwestern representatives.
A. L. Young Machinery Co., 319 Howard St., San Francisco, Cal., Southwestern representatives.
Western Mining Supply Co., 56 E Broadway, Butte, Montana.
J. Peyton Hunter, 216 Commerce St., Dallas, Texas.
Allen P. Ely Co., 1106-8-10 Douglas St., Omaha, Neb.
Robinson & Cary Co., 4th and Wacouta Sts., St. Paul, Minn.
C. E. Robidoux, 1012 Chemical Building, St. Louis, Mo.
Thos. Cox & Sons, 322 E. Market St., Little Rock, Ark.
F. Codman Ford, 306 Baronne St., New Orleans, La.
G. B. Elliott, 805 Majestic Building, Detroit, Mich.
Indiana Road Machine Co., Ft. Wayne, Ind.
Cleveland Builders Supply Co., Cleveland, Ohio.
Keith-Simmons Co., Nashville, Tenn.
American Mfg. Co., 85 N. Forsythe St., Atlanta, Ga.
New York Concrete Machinery & Supply Co., 78-80 Murray St., New York, Eastern representatives.
Iowa Machinery & Supply Co., Des Moines, Iowa.
James Sullivan, Appleton, Wis.
Smith-Courtney Co., Richmond, Va.
Carlin Machinery & Supply Co., Sandusky and Lacock Streets, Allegheny, Pa.



CRUSHERS

for soft rocks, burnt lime, etc.

GYPSUM MACHINERY.

We design modern Plaster Mills and make all necessary Machinery, including Kettles, Nippers, Crackers, Buhrs, Screens, Elevators, Shafting etc.

SPECIAL CRUSHER-GRINDERS FOR LIME HYDRATORS.

BUTTERWORTH & LOWE

17 Huron Street, GRAND RAPIDS, MICH.

Gypsum Machinery

A fine and complete line of Modern Machinery.

KETTLES, CRUSHERS, NIPPERS, ETC.

We are now building the new Plymouth Mill at Fort Dodge, Iowa, the finest mill in the United States.

ASK FOR CATALOGUE.

Des Moines Manufacturing and Supply Company

DES MOINES, IOWA.

Tell 'em you saw it in ROCK PRODUCTS.

KING'S WINDSOR CEMENT
FOR PLASTERING WALLS AND CEILINGS

Elastic in its nature, can be applied with 25 per cent. less labor and has 12½ per cent. more covering capacity than any other similar material.

Buffalo Branch: CHAS. C. CALKINS, Manager
322 W. Genesee Street

J. B. KING & CO., No. 1 Broadway, New York

SPECIAL MACHINERY AND FORMULAS
FOR THE MANUFACTURE OF
WOOD FIBER PLASTER, FIRE PROOFING AND KINDRED PRODUCTS

We furnish the latest improved FIBER MACHINE, (fully patented), also FORMULAS, on a reasonable proposition. The strongest companies and oldest manufacturers are operating under my contracts.
WRITE FOR TERRITORY.

The Ohio Fiber Machinery Co.
J. W. VOGLESONG, GENERAL MANAGER.
Elyria, Ohio.

WHEELING WALL PLASTER CO.,
MANUFACTURERS AND JOBBERS
Wheeling Plaster and Builders Supplies.
WHEELING, - - WEST VIRGINIA.

The American Cement Plaster Co.
Make Plaster that Gives Satisfaction.

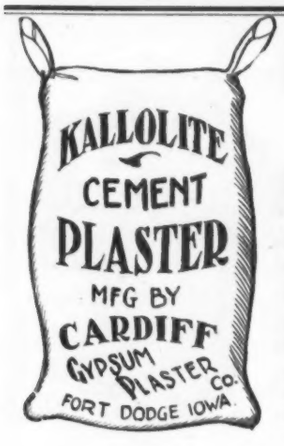
Try a car and be convinced

We have six mills and can always fill orders

Main Office: Laurance, Kansas.

DRYERS
OF EVERY TYPE
CONSTRUCTED FOR ALL PURPOSES.
AGENTS FOR BISHOP WATER JACKETED FURNACE FRONTS
UNITED STATES DRYING ENGINEERING CO.
66-70 BEAVER ST., NEW YORK, U.S.A.

The Sheridan Stucco Retarder Co. Toledo, O.
MANUFACTURERS OF
STUCCO RETARDER
Quality, Price, Shipping Facilities, and Prompt Attention, Unexcelled by any. Drop us a line for Prices.



KALLOLITE CEMENT PLASTER
IS MANUFACTURED FROM THE PUREST GYPSUM ROCK FOUND IN THE UNITED STATES AS SHOWN BY GOVERNMENT REPORT.
CARDIFF GYPSUM PLASTER CO.
MANUFACTURERS FORT DODGE, IOWA

Plaster! Plaster!
IOWA HARD PLASTER CO.

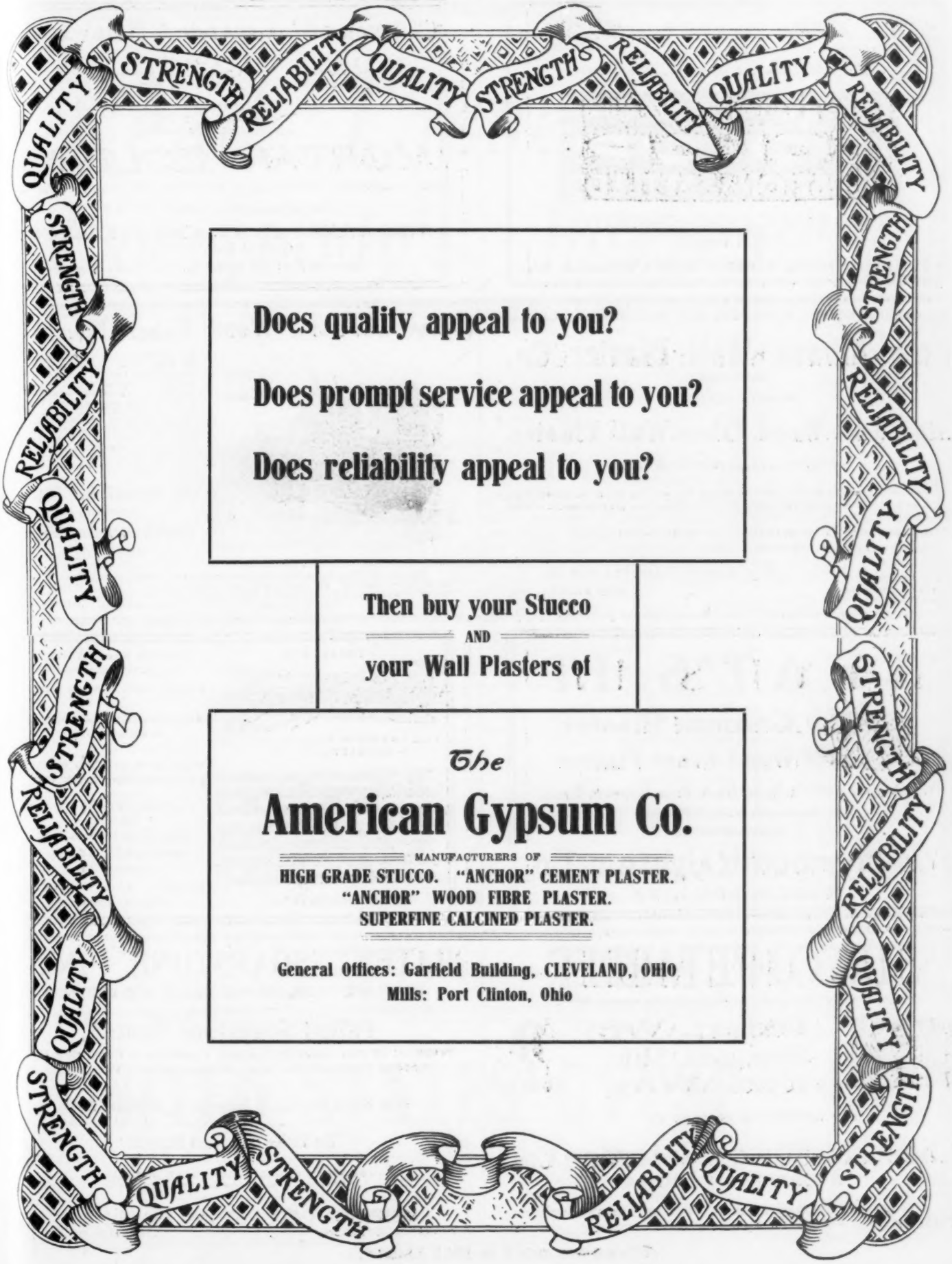
HARD BY NAME
HARD BY NATURE
HARD TO BEAT
NOT HARD TO GET

IOWA HARD PLASTER CO., Ft. Dodge, Iowa.

Empire Gypsum Co.

The Empire Gypsum Company's new mill, with capacity of 200 tons daily, is in operation and they are prepared to promptly furnish the best quality of Empire Stucco, Empire Neat Plaster, Sterling Wood Fiber Wall Plaster and Excelsior Wall Plaster Sanded.

Garbutt, Monroe County, New York.


QUALITY STRENGTH RELIABILITY QUALITY STRENGTH RELIABILITY QUALITY
RELIABILITY STRENGTH QUALITY RELIABILITY STRENGTH QUALITY
QUALITY STRENGTH RELIABILITY QUALITY STRENGTH RELIABILITY
STRENGTH QUALITY STRENGTH RELIABILITY QUALITY STRENGTH

Does quality appeal to you?

Does prompt service appeal to you?

Does reliability appeal to you?

Then buy your Stucco
AND
your Wall Plasters of

The

American Gypsum Co.

MANUFACTURERS OF

HIGH GRADE STUCCO. "ANCHOR" CEMENT PLASTER.
"ANCHOR" WOOD FIBRE PLASTER.
SUPERFINE CALCINED PLASTER.

General Offices: Garfield Building, CLEVELAND, OHIO
Mills: Port Clinton, Ohio

HIGHEST AWARD
ST. LOUIS EXPOSITION
1904.

RED, BROWN,
BUFF, PURPLE,
BLACK

For Brick, Mortar, Cement, Stone, etc.

The RICKETSON MINERAL COLORS
COLOR
QUESTION SETTLED

FOR QUALITY AND STRENGTH
WE LEAD.

RICKETSON MINERAL PAINT WORKS, Milwaukee, Wis.

"Cleveland" Expanded Metal Lath

Rigid
Reversible
Reasonable

Easy to apply
Economical to plaster over—
Every sheet perfect

Self-furring
Surpassingly fine for
Stucco exterior work

MORTAR COLORS

Highest standard of excellence in Black, Red, Buff, Brown and Purple

Roofing of all kinds manufactured by

THE GARRY IRON AND STEEL CO.
CLEVELAND, OHIO.
Eastern Office: 1123 Broadway, New York City.

H. L. Graf, Pres. E. T. Slider, Vice-Pres. & Gen'l Mgr. Osborne G. Reilly, Sec. & Treas.

New Albany Wall Plaster Co.
(Incorporated.)

MANUFACTURERS OF

Star and Wood Fiber Wall Plaster.

NEW ALBANY, IND.

We wish to announce to the trade that we are now running and at the present time, are in position to fill all orders promptly. Those who have used our goods claim it is the finest they ever had.

If you have not tried it, we are sure it would be to your interest to do so.

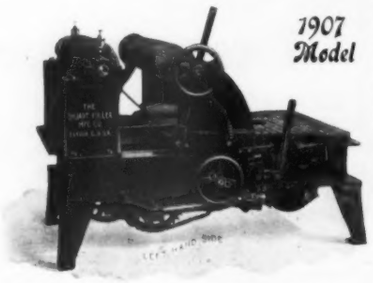
Prices always right and your orders solicited.

NEW ALBANY WALL PLASTER CO.,

Cumberland Phone 408.
Home Phone 137.

NEW ALBANY, IND.

The Leonard Wood Fiber Machine



Has an Automatic, Proportional, Increasing Feed, which keeps grade of fiber uniform from start to finish, and holds machine to highest possible rate of production for the grade of fiber and number of saws. Does not begin with fiber and end with dust, nor fall off in rate of production on each log, from 40 to 80 per cent as do the ordinary non-increasing feed machines. Works logs up to 24x24 inches. No royalty string attached to sale. Pay no attention to misrepresentations of our competitors but write for descriptive circular and terms to

The Shuart-Fuller Mfg. Co.
Successors to
The Elyria Machine Works,
Elyria, Ohio

THE SHUART-FULLER MFG. CO., Elyria, Ohio

Gentlemen:—What is the very best, cash-with-order price you will make on another Leonard Fiber Machine? We want no other machine but yours. It is all and more than you claimed for it, and is running steady ten hours every day and doing fine work.

Yours truly, GUARANTY WOOD FIBER PLASTER CO., Chattanooga, Tenn

THAT'S IT

PLYMOUTH Cement Plaster
Wood Fiber Plaster

The Brand that's Made from Pure Gypsum Rock.

Correspondence Solicited.

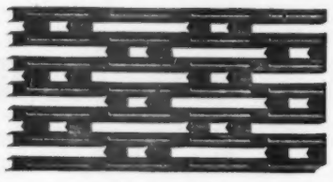
MANUFACTURED BY

The Plymouth Gypsum Co.

FORT DODGE, IOWA

TRUSS LATH.

THE AMERICAN ROLLING MILL CO.
MIDDLETOWN, OHIO.



CLINCHER LATH.

SOLID PARTITIONS
ERECTED WITHOUT
STEEL STIFFENING RODS
are
ABSOLUTELY FIRE-PROOF
TRUSS LATH
is
BEST FOR STUCCO WORK,
LIGHT FLOOR SLABS, ETC.

CLINCHER LATH
LEADS
AS A PLASTER SAVER.
SMALL KEY-LEVEL
SURFACE.

Strong. Rigid. Durable.
Write for Samples.

STUCCO RETARDER

THE Oldest, Why
Strongest, Why
Best, Why ?

BECAUSE IT IS MADE BY

Chemical Stucco Retarder Co.
WEBSTER CITY, IOWA

Our new Air Separation plant gives us the most uniform Retarder made. Write for sample, and let us prove it.

PATENT SOAPSTONE FINISH

PLAIN AND IN COLORS FOR WALLS AND CEILINGS.

Patent Soapstone Mortar.

Prepared in any Color for Laying Pressed and Enameled Brick Stone Fronts, Terra Cotta, Chimneys, Fire Places, Etc.

The Dodge Blackboard Material or Artificial Slate.

The Potter Blackboard Material.

SOAPSTONE MICA. CONCRETE DRESSING.
CRUSHED, GROUND AND BOLTED SOAPSTONE.

AMERICAN SOAPSTONE FINISH CO.
S. P. DODGE, Proprietor. CHESTER DEPOT, VT.

Tell 'em you saw it in ROCK PRODUCTS.

Read These Aloud
Everybody's Interested!

COLUMBUS, OHIO, Feb. 11th, 1907.
United States Gypsum Co.,
Cleveland, Ohio.
GENTLEMEN:
We have been using your Universal Finish but a few months and are highly gratified at the popularity it has obtained with our customers. We have found in its use everything you claim for it. Reports from plasterers who are using it indicate that their lime troubles are over. Its easy spreading qualities, and the smooth hard finish it makes, mark a distinct advancement in the plastering line.
Yours truly,
THE COLUMBUS CONTRACTORS' SUPPLY CO.

MARQUETTE, MICH., Feb. 20th, 1907.
UNITED STATES GYPSUM COMPANY,
Chicago, Ill.
GENTLEMEN:
We have had 35 tons of your Universal and Silico Finishes, and find them not only what you claim, but one of the most interesting plaster items that we have ever handled. You may add two tons of the Universal to the order for plaster which you now have.
Yours very truly,
THE SUPERIOR LUMBER COMPANY.

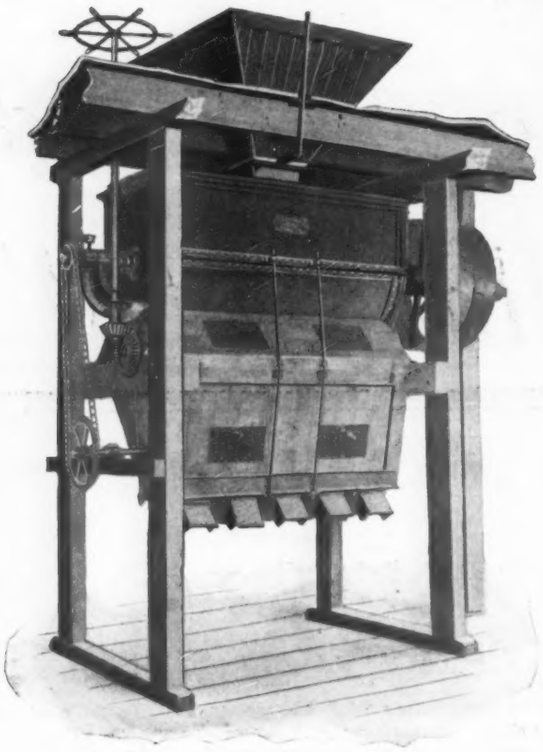
SOUTH OMAHA, NEB., March 2d, 1907.
United States Gypsum Co.,
Minneapolis, Minn.
GENTLEMEN:
Answering your favor regarding Universal Finish, will say we have found it to be the right thing in the right place. With us it has its place with the trade the same as plaster, they asking for it after having given it a trial.
Yours very truly,
B. E. WILCOX & COMPANY.

SOUTH OMAHA, NEB., March 2d, 1907.
United States Gypsum Co.,
Minneapolis, Minn.
GENTLEMEN:
We have used considerable of your Universal Finish during the past season and our customers are well pleased with the results. We could not think of allowing ourselves to run out of stock now. Please put five tons in car to be shipped March 15th.
Yours very truly,
CROSBY, KOPIETZ, CASEY CO.

OTTAWA, ILL., Feb. 23d, 1907.
UNITED STATES GYPSUM COMPANY,
Chicago, Ill.
GENTLEMEN:
The new Universal Finish seems to make a "hit." The mechanics all like it and it is the best seller we have ever had. Send us 25 tons of cement plaster and 5 tons of Universal Finish.
Yours very truly,
HAMILTON & VINCENT.

COLUMBUS, OHIO, Feb. 11th, 1907.
UNITED STATES GYPSUM COMPANY,
Cleveland, Ohio.
GENTLEMEN:
Replying to yours of the 9th inst. I have thoroughly investigated Universal Finish and believe it will be the future material. It makes a smooth, hard surface. I congratulate you for your achievement in this line.
Very truly yours,
JACOB RAPP & CO.

UNITED STATES GYPSUM CO.
CHICAGO CLEVELAND MINNEAPOLIS



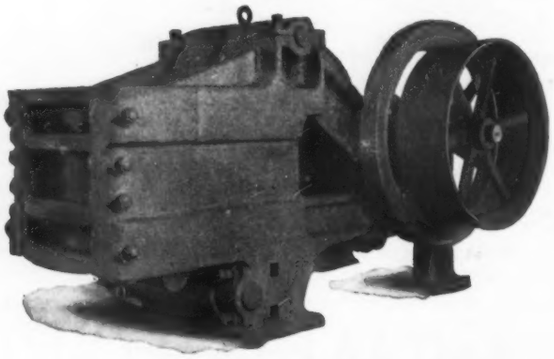
ENTERPRISE PLASTER MIXER

NOISELESS,
DURABLE and EFFICIENT.

For Mixing Hair Fibre, Wood Fibre and Retarder with Dry Plastering Materials.

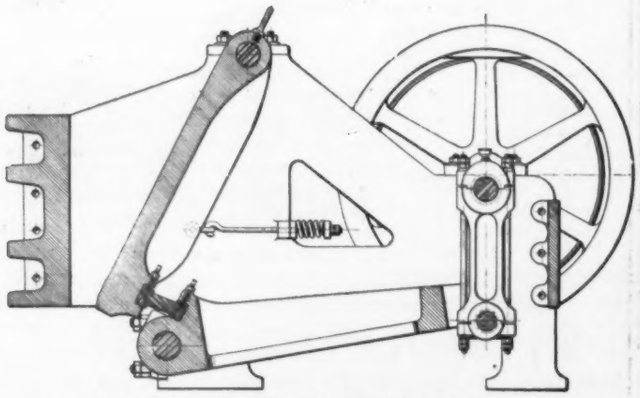
Calcining Kettles

Jaw and Rotary Crushers for Gypsum, Reels, Vibratory Screens, Hair Pickers and Transmission for applying power.



EHRSAM NO. 4 JAW CRUSHER.

This machine will handle large chunks and reduce from 30 to 40 tons of Gypsum per hour to 2½-inch maximum or smaller if wanted.



NO. 4 JAW CRUSHER, SHOWING SECTIONAL VIEW OF NIPPER.
The jaw opening at inlet is 18x28 inches.

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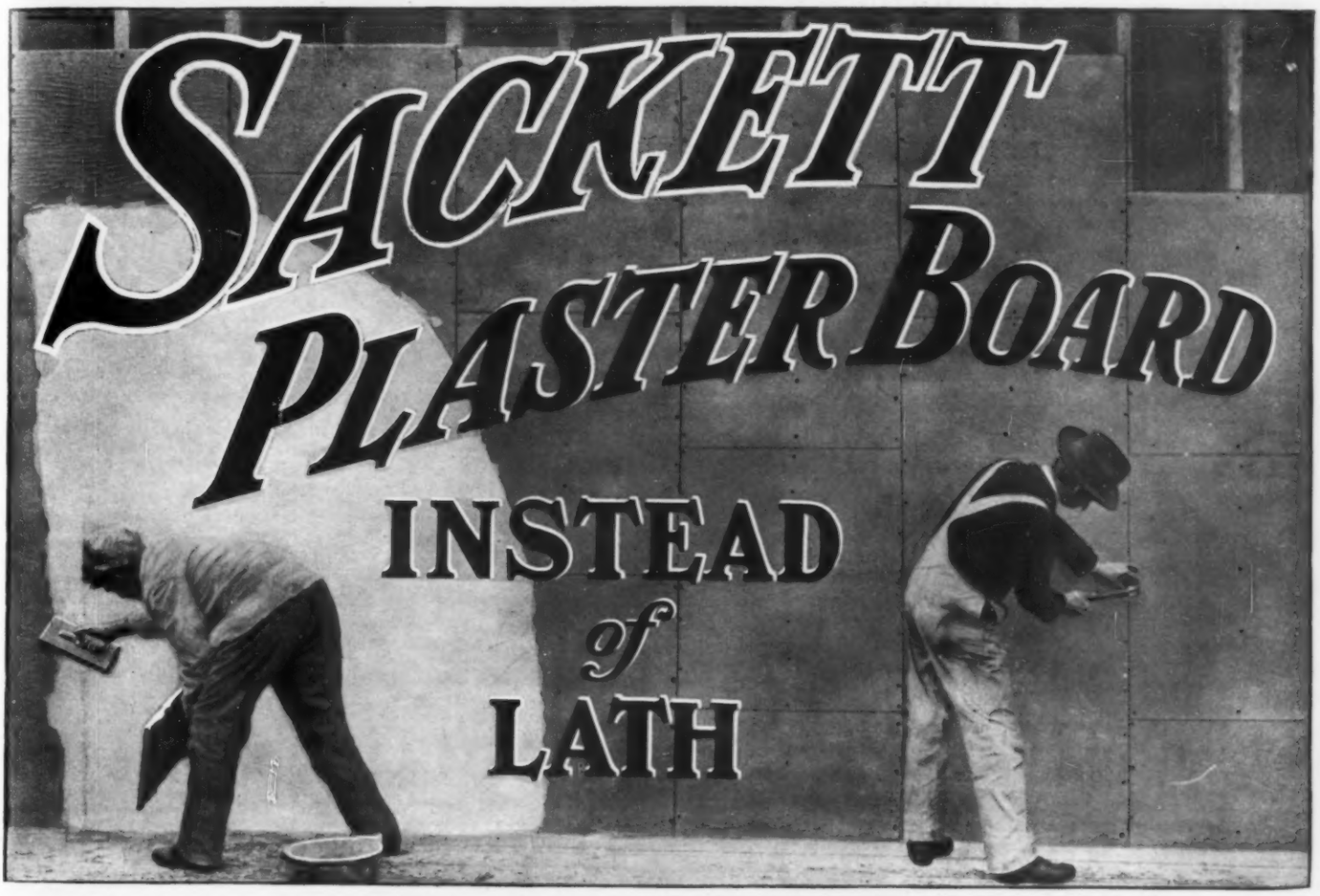

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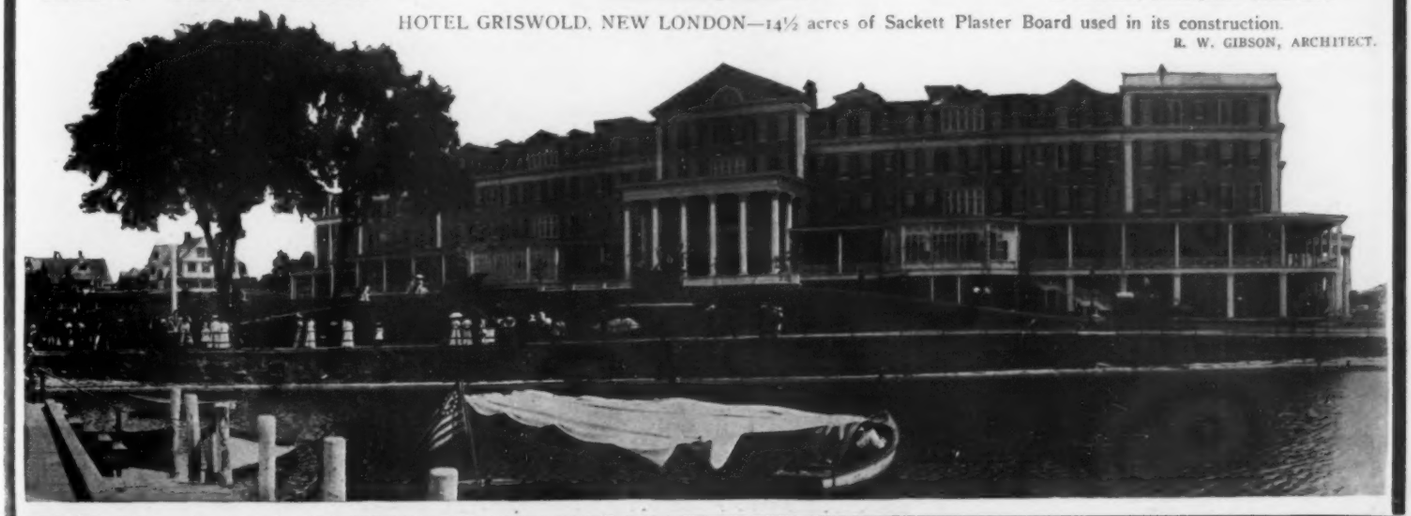

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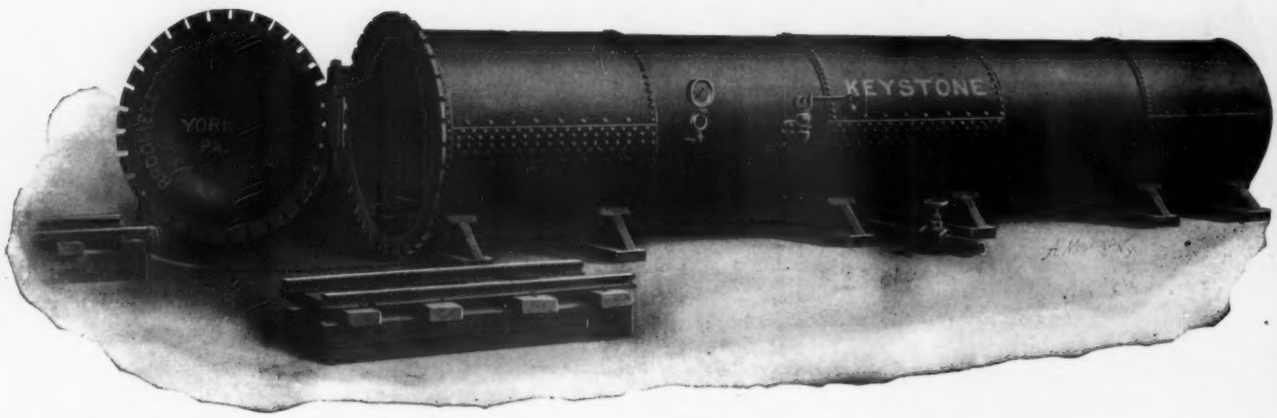

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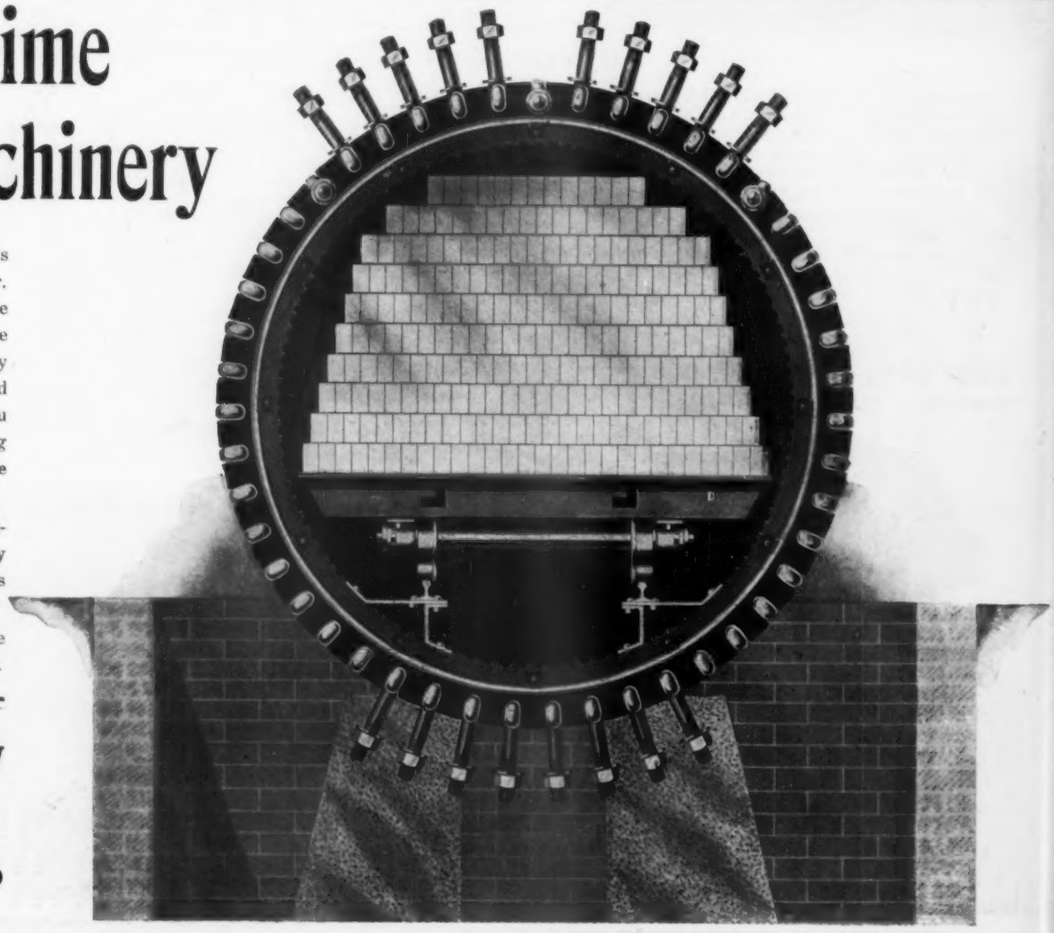

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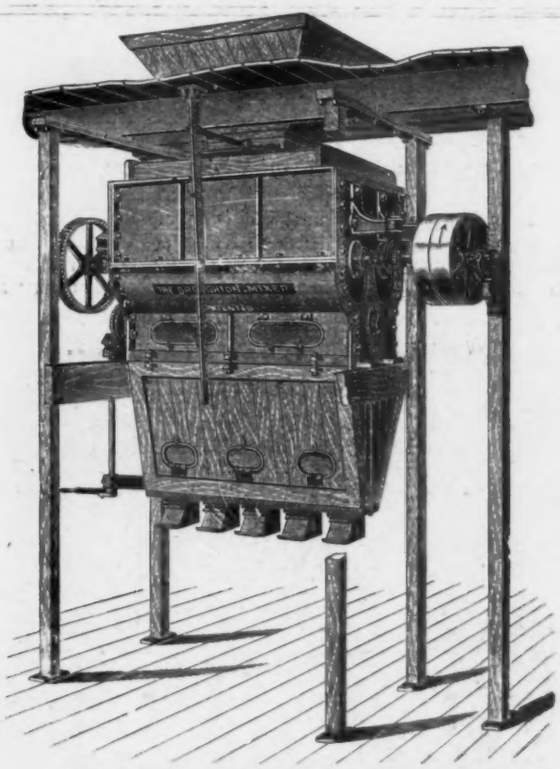

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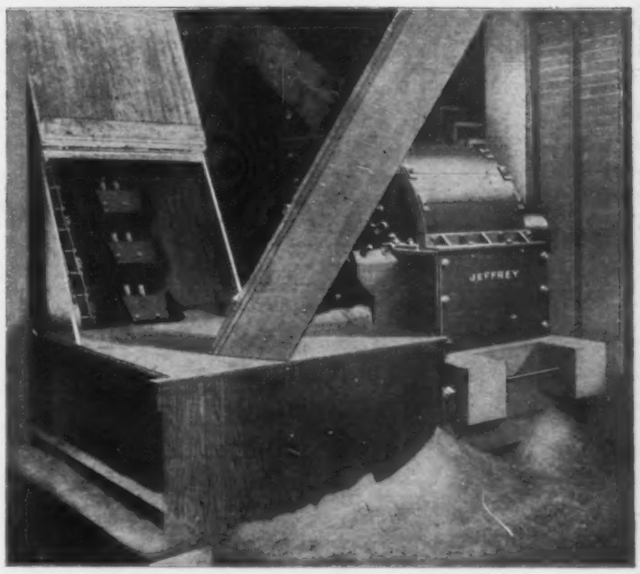

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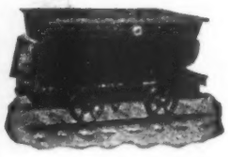

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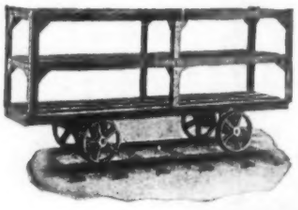

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